

Original Article

Taxonomic Study of Japanese Ctenopelmatinae (Hymenoptera, Ichneumonidae), with Descriptions of 22 New Species

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Abstract. In the present paper, 17 genera and 37 species of Japanese Ctenopelmatinae were taxonomically studied. The genera *Mesoleptidea* Viereck, 1912, *Lagarotis* Förster, 1869, and *Lethades* Davis, 1897 were newly recorded from Japan. The following 22 new species were described: *Notopygus bicornis* sp. nov., *N. japonicus* sp. nov. (Ctenopelmatini); *Anisotacrus nocturnus* sp. nov., *An. pulchellus* sp. nov., *Euryproctus flavidens* sp. nov., *Mesoleptidea amanoi* sp. nov., *Mesolep. japonica* sp. nov., *Mesolep. mesorufa* sp. nov. (Euryproctini); *Alcochera nigra* sp. nov., *Campodorus albimarginalis* sp. nov., *Ca. japonicus* sp. nov., *Ca. rufidorsalis* sp. nov., *Hyperbatus ariminensis* sp. nov., *H. borealis* sp. nov., *H. montanus* sp. nov., *H. nigrifemur* sp. nov., *Lagarotis nigra* sp. nov., *Lamachus montanus* sp. nov., *Leipula pulchra* sp. nov., *Mesoleius morishitai* sp. nov. (Mesoleiini); *Perilissus autumnalis* sp. nov. (Perilissini); *Lethades kanagawensis* sp. nov. (Pionini). *Ischnus karafutonis* Matsumura, 1911 is newly synonymised with *Ct. boreale* Holmgren, 1857 (syn. nov.). Five species, *Ctenopelma pineatus* Sheng, Sun & Li, 2019, *Ct. rufofasciatum* Sheng, Sun & Li, 2019 (Ctenopelmatini), *Mesolep. maculata* Sheng, Sun & Li, 2020 (Euryproctini), *Al. flavoclypeata* Sheng & Sun, 2021, and *Perispuda bibullata* Sheng, 1999 (Mesoleiini), were newly recorded from Japan. In addition, the ten Japanese species were newly recorded from several localities in Japan.

Key words: distribution, new record, parasitoid wasps, taxonomy

Introduction

The ichneumonid subfamily Ctenopelmatinae Förster, 1869 comprises 9 tribes, 107 genera and more than 1500 species worldwide (Yu *et al.*, 2016). This group is basically koinobiont endoparasitoids of sawfly larvae (Broad *et al.*, 2018). Some species of this subfamily are known to be natural enemies of forest pests. In Japan, for example, Watanabe *et al.* (2015) described *Tanzawana flavomaculata* Watanabe & Kasparyan, 2015, a parasitoid of *Fagineura crenativora*, a serious pest of beech tree. In addition, Watanabe (2023) recently described *Priopoda macrophyae* Watanabe, 2023, a parasitoid of a serious pest of Japanese ash tree, *Macrophya satoi*. Thus, this group is

one of important insects for pest management in forests. At present, 43 genera and 95 species of Ctenopelmatinae have been recorded from Japan (Watanabe *et al.*, 2023), but many unidentified species have been found by the author.

Recently, the author attempted to identify Japanese Ctenopelmatinae deposited in the Kanagawa Prefectural Museum of Natural History and some institutes and found some newly recorded species and new species. The purpose of this study is to undertake a taxonomic study of these wasps.

Materials and methods

In this study, dried specimens deposited in the following collections were examined:

AEIC, American Entomological Institute, Logan, Utah, USA.

KPM-NK, Insect collection, Kanagawa Prefectural Museum of Natural History, Odawara, Kanagawa, Japan.

MNHAH, Museum of Nature and Human Activities,

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ZooBank LSID: urn:lsid:zoobank.org:pub:D4FC7074-ADC6-4310-B60E-12B7ECBD6E25

Sanda, Hyogo, Japan.

NARO, Institute for Plant Protection, National Agriculture and Food Research Organization, Tsukuba, Japan.

OMNH, Osaka Museum of Natural History, Osaka, Japan.

SEHU, Hokkaido University Museum, Sapporo, Japan.

TMNH, Toyohashi Museum of Natural History, Toyohashi, Aichi, Japan.

ZISP, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.

ZSM, Zoologische Staatssammlung München, Germany.

A Nikon SMZ800N stereomicroscope (Nikon Co. Ltd., Japan) was used for observation. Photographs (Figs. 1–37) were taken using a Canon 7D Mark2 (Canon Co. Ltd., Japan) with Canon 100mmL IS (for the lateral habitus) and an Olympus TG-4 digital camera (Olympus Co. Ltd., Japan) connected to the stereomicroscope (for the photographs except for the lateral habitus). Photographs and line drawings (Figs. 38–41) were edited using Adobe Photoshop® CC (Adobe Co. Ltd., USA). The morphological terminology follows Broad *et al.* (2018). Eady (1968) is also used for the description of microsculpture. The following abbreviations are used in the description: holotype (HT), segment of antennal flagellum (FL), diameter of lateral ocellus (OD), ocellular line (OOL), postocellar line (POL), segment of tarsus (TS) and metasomal tergite (T). The following abbreviations are used for material data: female (F), male (M), yellow pan trap (YPT) and Malaise trap (MsT). For the new species and newly recorded species from Japan, I propose standard Japanese names (SJN).

The identification of the genera is based on Townes (1970), Kasparyan (2003: for *Campodorus* Förster, 1869 and *Mesoleius* Holmgren, 1856), and Sheng *et al.* (2022: for *Alcochera* Förster, 1869).

Results and discussions

As a result of the taxonomic classification, I obtained new scientific data in 17 genera and 37 species of Japanese Ctenopelmatainae. In the following taxonomic part, I studied these taxa including 22 new species, 1 new synonym, and 5 species new to Japan. The genera *Mesoleptidea* Viereck, 1912, *Lagarotis* Förster, 1869, and *Lethades* Davis, 1897 are new to Japan. The five species newly recorded from Japan are these described from China in recent years, suggesting a link between the Japanese and Chinese faunas.

With the results of this study, a total of 46 genera and 121 species of Ctenopelmatainae are recorded from Japan.

Family **Ichneumonidae** Latreille, 1802

Subfamily **Ctenopelmatainae** Förster, 1869

Tribe **Ctenopelmataini** Förster, 1869

Genus ***Ctenopelma*** Holmgren, 1857

Ctenopelma Holmgren, 1857: 117. Type species: *Ctenopelma nigra* Holmgren, 1857. Designated by Viereck (1912).

Xaniopelma Tschek, 1868: 443. Type species: *Xaniopelma sericans* Tschek, 1869 (= *Ctenopelma nigra* Holmgren, 1857). Monotypic.

Zachresta Förster, 1869: 151. Type species: *Zachresta insignis* Woldstedt, 1878 (= *Mesochorus lucifer* Gravenhorst, 1829). Designated by Viereck (1914).

Diedrus Förster, 1869: 200. Type species: *Diedrus areolatus* Davis, 1897. Designated by Viereck (1914).

Eryma Förster, 1869: 202. Type species: *Eryma stygium* Kriechbaumer, 1891 (= *Ctenopelma nigra* Holmgren, 1857). Included by Kriechbaumer (1891). Name preoccupied.

Holmgrenia Kriechbaumer, 1877: 146. Type species: *Holmgrenia pulchra* Kriechbaumer, 1877 (= *Campoplex tomentosus* Desvignes, 1856). Monotypic. Name preoccupied.

Kriechbaumeria Dalla Torre, 1885: 52. New name for *Holmgrenia*.

Polyomorus Kriechbaumer, 1894: 60. Type species: *Polyomorus gagatinus* Kriechbaumer, 1894 (= *Campoplex tomentosus* Desvignes, 1856). Monotypic.

Neoeryma Ashmead, 1898: 169. New name for *Eryma*.

Pseudobanchus Szépligeti, 1911: 79. Type species: *Exetastes nigripennis* Gravenhorst, 1829. Monotypic.

Polyhomorus Schulz, 1906: 99. Emendation for *Polyomorus*.

Four species, *Ct. boreale* Holmgren, 1857, *Ct. karafutonis* (Matsumura, 1911), *Ct. lucifer* (Gravenhorst, 1829) (= *Ct. lucifer* in some literature), and *Ct. tomentosum* (Desvignes, 1856), have been recorded from Japan. In this study, I newly record *Ct. pineatus* Sheng, Sun & Li, 2019 and *Ct. rufofasciatum* Sheng, Sun & Li, 2019, and newly synonymise *Ischnus karafutonis* Matsumura, 1911 with *Ct. boreale* below.

Key to Japanese species of *Ctenopelma*

1. Lateral longitudinal carina of propodeum largely (at least above spiracle) absent. Face matt and punctate. Ovipositor sheath slightly shorter than ($0.66\text{--}0.8 \times$ as long as) hind TS I. Coxae, trochanters, and trochantelli black. Hind femur usually largely black. Metasomal tergites reddish brown except for T I. Other tergites also sometimes partly to entirely darkened in female. Scutellum sometimes with a yellow spot. Pronotum yellow in male. Vertex with or without a pair of yellow spots along eye margins.

..... *Ctenopelma tomentosum* (Desvignes, 1856)

-. Lateral longitudinal carina of propodeum complete or almost complete (Fig. 41D). Face polished and punctate. Other character states various.

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2. Ovipositor sheath at least $10 \times$ as long as maximum depth in lateral view, distinctly longer than hind TS I (Fig. 3A). Metasomal tergites black, several tergites (at least T III) red to reddish brown (Fig. 3A).

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-. Ovipositor sheath less than $3.5 \times$ as long as maximum depth in lateral view, distinctly shorter than hind TS I (Figs. 1A, 2A). Metasomal tergites without conspicuous red area, almost or entirely black (Figs. 1A, 2A).

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3. Area superomedia and area petiolaris of propodeum separated by carina. Anterior portion of lateromedian longitudinal carina of propodeum obliterated. Face entirely yellowish brown in female. T II to T IV red to reddish brown in female.

..... *Ctenopelma lucifer* (Gravenhorst, 1829)

-. Area superomedia and area petiolaris of propodeum more or less confluent. Anterior portion of median longitudinal carina of propodeum complete and strong. Face black, lower lateral portion with large to small white spots in female (Fig. 3B). T III red to reddish brown in female (Fig. 3B).

..... *Ctenopelma rufofasciatum* Sheng, Sun & Li, 2019

4. Tarsal claw simple. Antenna and legs entirely black in female (Fig. 2A). Ovipositor without a subapical dorsal notch (Fig. 41P).

..... *Ctenopelma pineatus* Sheng, Sun & Li, 2019

-. Tarsal claw pectinate (Fig. 41J). Antenna and fore and mid legs at least partly yellowish brown in female (Fig. 1A). Ovipositor with a subapical dorsal notch (Fig. 41O).

..... *Ctenopelma boreale* Holmgren, 1857

(= *C. karafutonis* (Matsumura, 1911) **syn. nov.**)

Ctenopelma boreale Holmgren, 1857

(SJN: Karafuto-tsuya-maru-himebachi)

(Figs. 1A–C, 41C, J, O)

Ctenopelma boreale Holmgren, 1857: 120.

Ischnus karafutonis Matsumura, 1911: 93. **syn. nov.**

Description. See Kasparyan (2004).

Materials examined. JAPAN: KPM-NK 84794, 84795, 2 F, Hokkaido, Horokanai Town, Moshiri, Uryu, 17. VII. 2012, K. Watanabe leg.; KPM-NK 84796, F, Hokkaido, Kuriyama Town, 8–22. VI. 2007, A. Ueda leg. (MsT); KPM-NK 84797, 84798, 2 M, Gunma Pref., Katashina Vil., Sugenuma, 2. VII. 2008, K. Watanabe leg.; KPM-NK 84799, M, Kanagawa Pref., Fujino Town, Sanogawa, 21. V. 2006, H. Nagase leg.; KPM-NK 5003043, M, Kanagawa Pref., Kiyokawa Vil., Mt. Tanzawa-san, 16. V. 2013, T. Taniwaki leg. (Flight interception trap); KPM-NK 5003044, ditto, 6. VI. 2013; KPM-NK 84800, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 7. VIII. 2010, K. Watanabe leg.; KPM-NK 84801, F, Toyama Pref., Toyama City, Arimine, Inonedani, 7–14. VII. 2009, M. Watanabe leg. (MsT); KPM-NK 84802, F, ditto, 4–11. VIII. 2009; KPM-NK 84803, 84804, 2 F, Fukui Pref., Oono City, Mt. Dosaizan, 20. V. 1982, H. Kurokawa leg.; KPM-NK 84805, F, Fukui Pref., Kokuratoge, 7. VI. 1982, T. Murota leg.; KPM-NK 84806, F, Fukui Pref., Imajo Town, Hachibuse-yama, 6. VII. 1981, T. Murota leg.; KPM-NK 84807, F, Fukui Pref., Natasho Vil., Mushidani, 9. V. 1982, T. Murota leg.; KPM-NK 84808–84810, 3 M, Fukui Pref., Ikeda Town, Mt. Heko-san, 16. VI. 1981, T. Murota leg.; KPM-NK 84811, M, ditto, 10. VI. 2016, S. Shimizu leg.; KPM-NK 84812, 84812, 2 M, ditto, 18. VI. 2016, S. Shimizu leg.; KPM-NK 84814, M, Fukui Pref., Oono City, Minamirokuroshi, Okuetsu-kogen to Mt. Hoduki, 28. V. 2011, S. Fujie leg.; OMNH, 2 M, ditto; KPM-NK 84815, M, Miyazaki Pref., Gokasecho, 5. V. 1980, H. Nagase leg.

Distribution. Japan (Kunashiri Is., Hokkaido, Honshu, and Kyushu); widely distributed in Palearctic region.

Remarks. This is the first record of this species from Honshu and Kyushu. According to Kasparyan (2004), this species and *Ct. karafutonis* can be distinguished by the colouration of the vertex (females) and of the face, clypeus, mandible, fore and mid coxae, trochantelli of all legs, and laterotergite of T IV (males), while these character states overlap. In addition, the colouration of the female vertex is exactly the same in both species. Thus, I newly synonymise *Ct. karafutonis* into *Ct. boreale*.

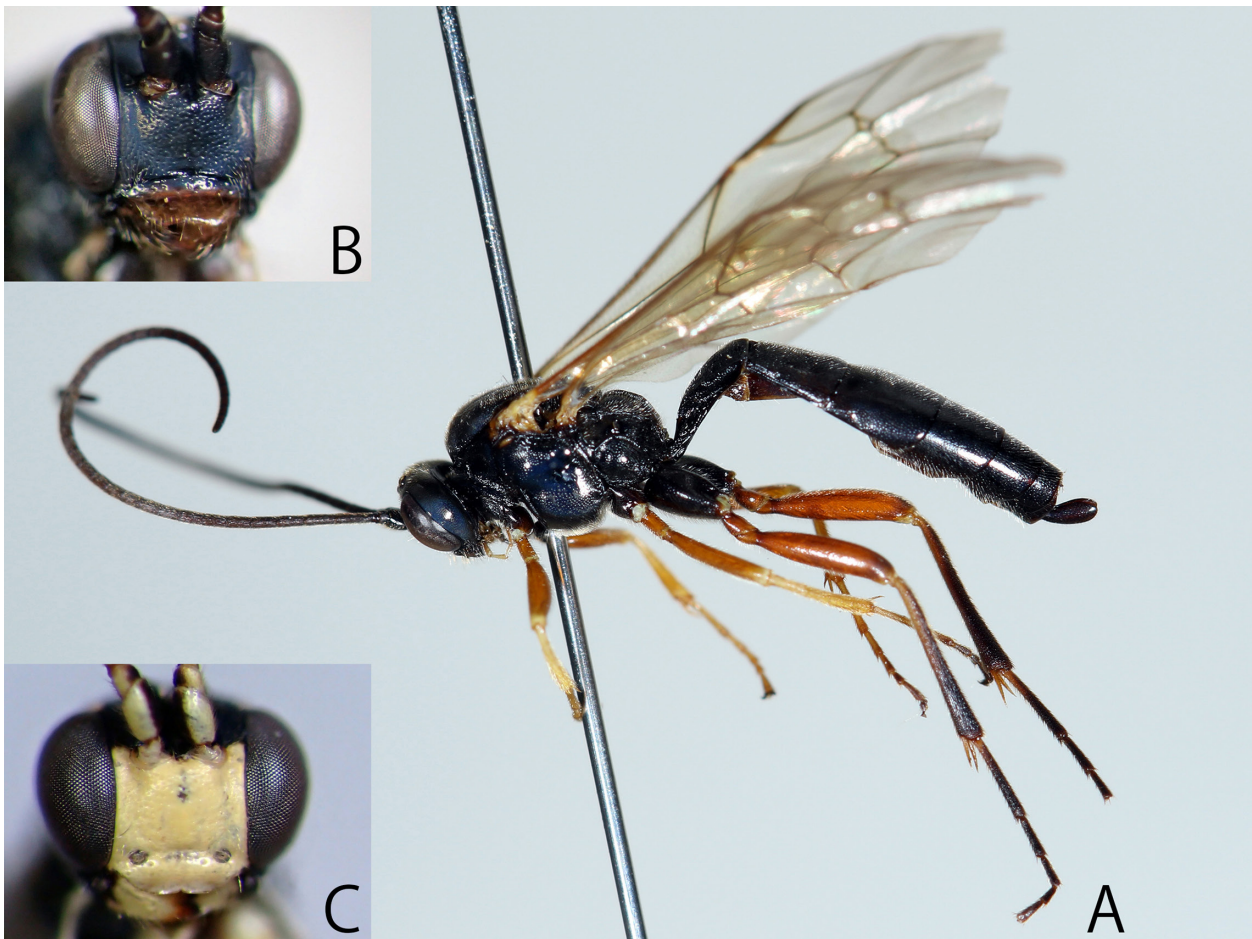


Fig. 1. *Ctenopelma boreale* Holmgren, 1857 (A, B: KPM-NK 84794, female; C: KPM-NK 84798, male) — A: lateral habitus; B, C: head, frontal view.

Ctenopelma pineatus Sheng, Sun & Li, 2019
(New SJN: Hosomi-tsuya-maru-himebachi)
(Figs. 2A–E, 41P)

Ctenopelma pineatus Sheng, Sun & Li, 2019, in Sun *et al.* (2019): 16.

Description. See Sun *et al.* (2019).

Materials examined. JAPAN: KPM-NK 84787, F, Nagano Pref., Chino City, Kitayama, Mugikusa-toge, 20. VI. 2007, H. Katahira leg.; KPM-NK 84788, M, Aomori Pref., Mt. Hakkoda, 8. VII. 1958, R. Ishikawa leg.

Distribution. Japan (Honshu); China.

Bionomics. Unknown in Japan. In China, two sawflies, *Acantholyda posticalis* (Matsumura, 1912) and *Cephalcia lariciphila* (Wachtl, 1898) (both Pamphiliidae) were recorded as host (Sun *et al.*, 2019).

Remarks. This is the first record of this species from Japan. This species (especially the males) appears similar to *Ct. boreale*, but can be easily distinguished by the simple tarsal claw (pectinate in *Ct. boreale*).

Ctenopelma rufofasciatum Sheng, Sun & Li, 2019
(New SJN: Oo-tsuya-maru-himebachi)
(Figs. 3A–D)

Ctenopelma rufofasciatum Sheng, Sun & Li, 2019, in Sun *et al.* (2019): 12.

Description. See Sun *et al.* (2019).

Materials examined. JAPAN: KPM-NK 84789, F, Fukushima Pref., Hinoemata Vil., 19. VII. – 1. VIII. 2004, H. Makihara leg. (MsT); KPM-NK 84790, F, Gunma Pref., Tsumagoi Vil., Takamine-kogen, 3. IX. 2015, M. Ito leg.; KPM-NK 84791, M, Saitama Pref., Ranzan Town, Oohirayama, 12. V. 2001, T. Nambu leg.; KPM-NK 84792, F, Nagano Pref., Ueda City, Sugadaira-kogen, 1. VIII. 2012, S. Fujie leg.; KPM-NK 84793, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 31. VII. 2013, K. Watanabe leg.

Distribution. Japan (Honshu); China.

Bionomics. Unknown in Japan. In China, cocoon of a sawfly, *Cephalcia lariciphila* (Wachtl, 1898) (Pamphiliidae) was recorded as host (Sun *et al.*, 2019).

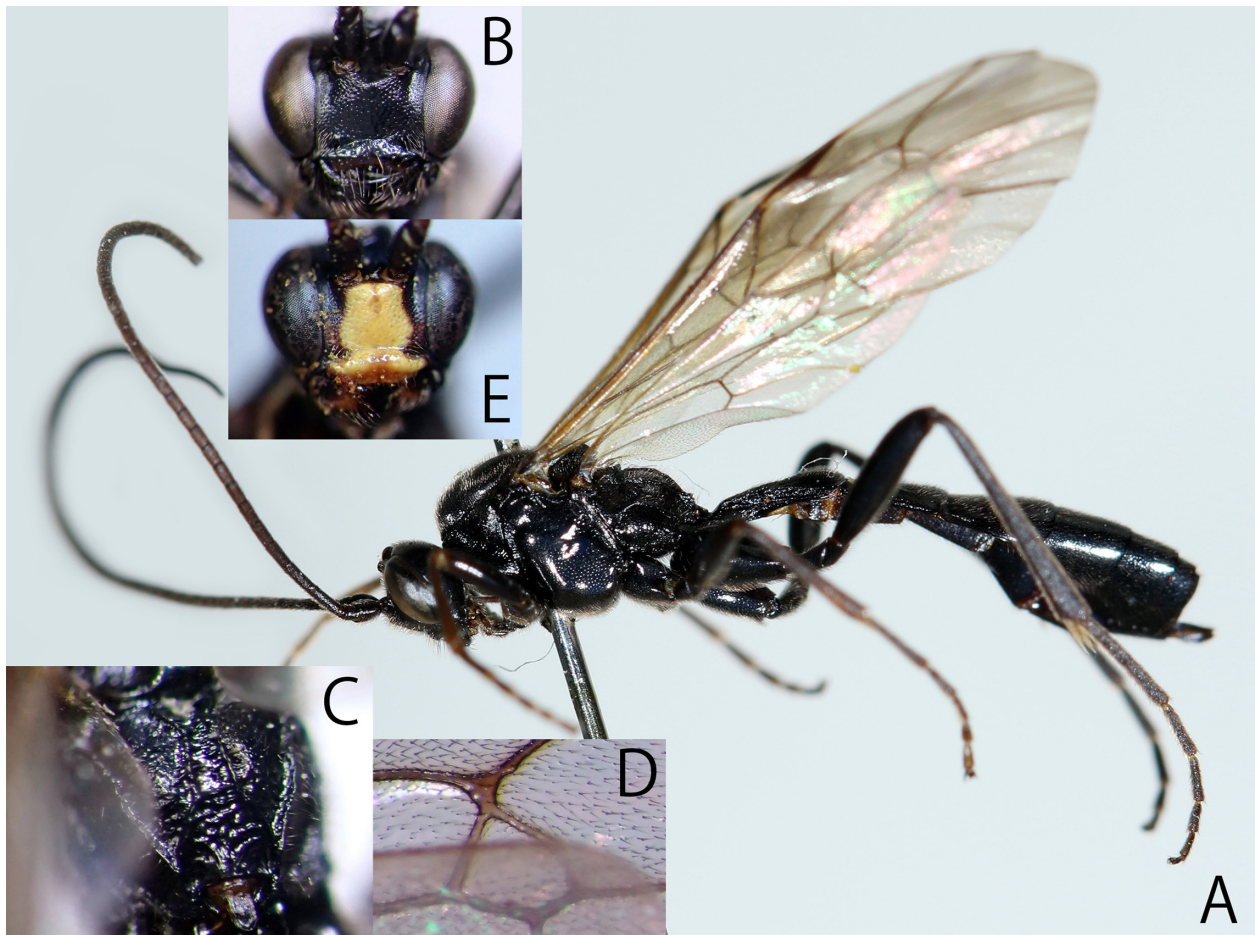


Fig. 2. *Ctenopelma pineatus* Sheng, Sun & Li, 2019 (A–D: KPM-NK 84787, female; E: KPM-NK 84788, male) — A: lateral habitus; B, E: head, frontal view; C: propodeum, dorso-lateral view; D: areolet.

Remarks. This is the first record of this species from Japan. This species resembles *Ct. lucifer* but can be distinguished by the following combination of characters: area superomedia and area petiolaris of propodeum more or less confluent (separated by carina in *Ct. lucifer*); anterior portion of median longitudinal carina of propodeum obliterated (complete and strong in *Ct. lucifer*); face black, lower lateral portion with large white spots (entirely yellowish brown in *Ct. lucifer*); frons and vertex entirely black (with lateral yellowish brown spots in *Ct. lucifer*); hind coxa, trochanter, and femur entirely black (brown to dark brown in *Ct. lucifer*); T III red (T II to T IV red in *Ct. lucifer*) (Sun *et al.*, 2019).

A synonym of *Ct. lucifer*, *Ct. tokioense* Uchida, 1930 (type locality: Tokyo), shares with the character states of *Ct. lucifer* sensu Sun *et al.* (2019). Thus both *Ct. lucifer* and *Ct. rufofasciatum* are distributed in Japan.

Genus *Notopygus* Holmgren, 1857

Notopygus Holmgren, 1857: 115. Type species: *Notopygus emarginatus* Holmgren, 1857. Designated

by Viereck (1912).

Antipygus Tschek, 1869: 438. Type species: *Antipygus megerlei* Tschek, 1869. Monotypic.

A single species, *N. nigricornis* Kriechbaumer, 1891, has been recorded from Shikotan Island, Japan. In this study, I describe two new species below. All Japanese species have the following combination of character states: antenna without a white band (Figs. 4A, 5A); face black (Figs. 4B, 5B); base of T II with a pair of median longitudinal carinae (Figs. 4E, 5E).

Key to Japanese species of *Notopygus* (female only)

1. Frons with a pair of horns (Fig. 38A). Clypeus entirely yellow (Fig. 4B). Posterior margin of T I, T II and T III yellowish brown to reddish brown. Posterior end of T VIII strongly projected in lateral view (Figs. 4A, 41M). Hind tibia and tarsus entirely yellowish brown (Fig. 4A).

..... *Notopygus bicornis* **sp. nov.**
 -. Frons without a pair of horns (Fig. 38B). Clypeus black at least dorsally (Fig. 5B). Hind tibia and tarsus at least

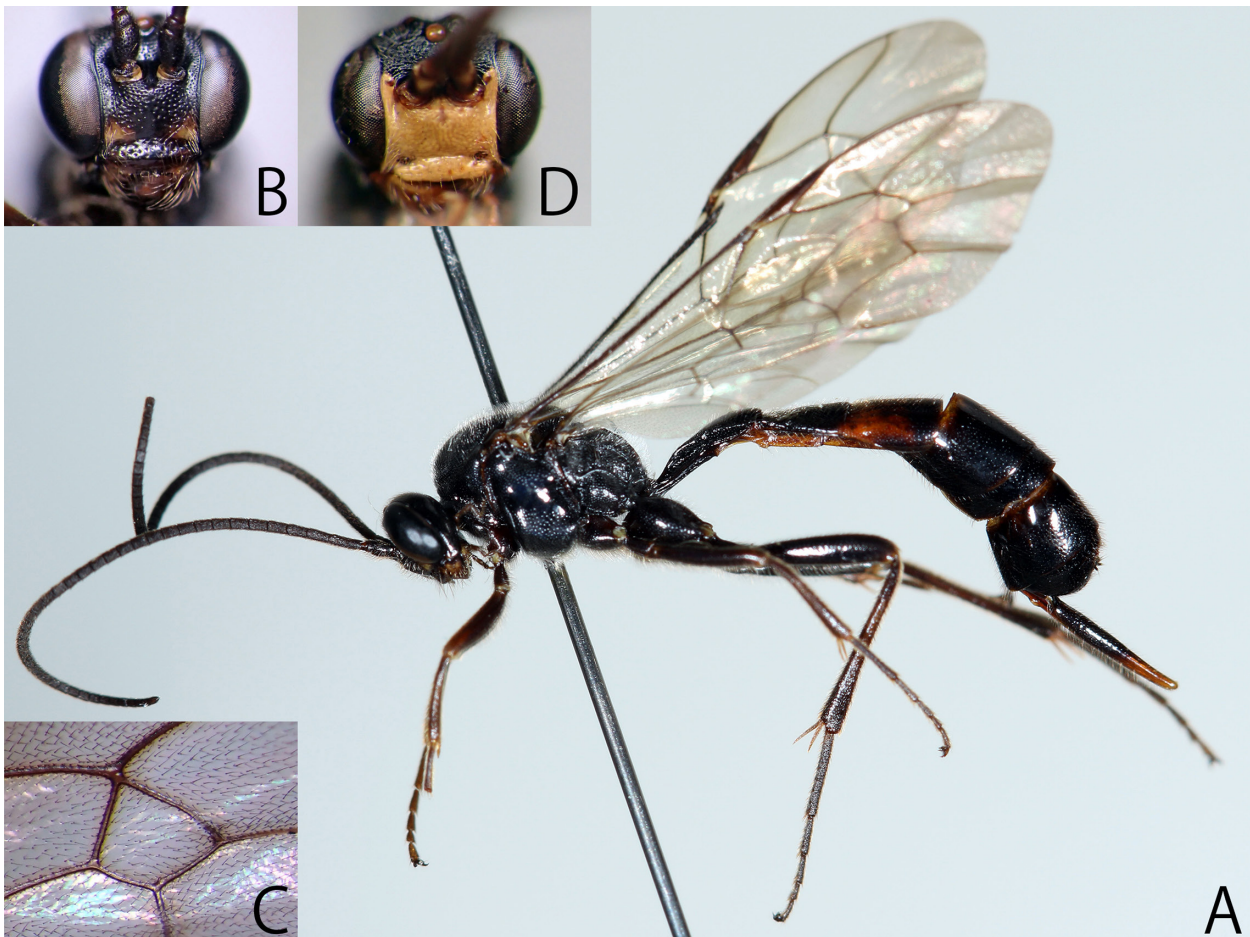


Fig. 3. *Ctenopelma rufofasciatum* Sheng, Sun & Li, 2019 (A–C: KPM-NK 84793, female; D: KPM-NK 84791, male) — A: lateral habitus; B, D: head, frontal view; C: areolet.

partly darkened (Fig. 5A). Other character states various.

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2. Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 5A). Posterior end of T VIII weakly projected in lateral view (Fig. 41N). Posterior margin of T I, T II, and T III dark reddish brown.

..... *Notopygus japonicus* **sp. nov.**
-. Fore wing vein 1cu-a postfurcal to vein M&RS. Posterior end of T VIII hardly projected in lateral view. Metasomal tergites sometimes without red area.
..... *Notopygus nigricornis* Kriechbaumer, 1891

***Notopygus bicornis* sp. nov.**

(SJN: Futakobu-magari-maru-himebachi)

(Figs. 4A–E, 38A, 40A, 41E, K, M)

Type series. Holotype: JAPAN, KPM-NK 81355, F, Nagano Pref., Yamanouchi Town, Nagaike, 22. VIII. 2007, K. Watanabe leg.

Description. Female ($n = 1$). Body length 13.5 mm, polished and covered with punctures and brown setae.

Head $0.65 \times$ as long as wide in dorsal view, punctate.

Clypeus $3.8 \times$ as broad as high, rather sparsely punctate, lower margin subtruncate (Fig. 40A), thick in lateral view. Face $2.5 \times$ as broad as high, punctate reticulate, convex medially in lateral view. Frons concave above antennal sockets, with a pair of horns (Fig. 38A). Dorsal profile of gena as Fig. 38A. Occipital carina complete. Occiput weakly concave in front of dorso-median part of occipital carina (Fig. 38A). Length of malar space $0.35 \times$ as long as basal width of mandible. POL $0.9 \times$ as long as OD. OOL $1.15 \times$ as long as OD. Antenna with 49 flagellomeres. FL I $2.5 \times$ as long as maximum depth, $1.25 \times$ as long as FL II.

Mesosoma densely punctate. Epomia short. Mesoscutum without notaulus. Mesopleuron with large smooth area around speculum (Fig. 4C). Epicnemial carina present laterally and ventrally. Propodeum punctate, all carinae present except for anterior transverse carina absent. Median section of posterior transverse carina indistinct with some transverse rugae (Fig. 41E). Area superomedia longer than wide, covered with transverse rugae (Fig. 41E). Fore wing length 10.5 mm. Areolet present, petiolated anteriorly, received vein 2m-cu slightly based of the outer angle (Fig. 4D). Fore wing vein 1cu-a slightly postfurcal to vein

M&RS (Fig. 4A). Nervellus subvertical, intercepted near the middle. Tarsal claws simple. Hind femur $4.1 \times$ as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 3.1: 2.0: 1.5: 1.0: 1.0. Hind tibia shorter than combined length of hind TS I, TS II, and TS III.

Metasoma finely punctate. T I $3.0 \times$ as long as maximum width, latero-median carina present basal 0.75 of T I, area between latero-median carina with a strong concavity. T II $1.35 \times$ as long as maximum width, a pair of longitudinal carinae present on basal 0.4 of T II (Fig. 4E). Posterior margins of T III to T VI each without notch (Fig. 41K). Posterior end T VIII strongly projected in lateral view (Fig. 41M). Ovipositor sheath $0.25 \times$ as long as hind tibia.

Colouration (Figs. 4A–E). Body (excluding wings and legs) black. Clypeus yellow. Malar space, mandible except for teeth, and palpi yellowish brown. Posterior parts of T I and T II, T III, and T IV more or less tinged with dark reddish brown. Sclerotized part of metasomal sternites partly tinged with dark reddish brown. Ovipositor yellowish brown. Wings brownish hyaline. Veins and pterostigma blackish brown except for yellowish-brown wing base. Legs yellowish brown except for coxae, base of trochanters, and hind femur black. Hind trochantellus

tinged with dark brown.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*bi*” (two) plus “*cornis*” (horned). This species has a pair of horns on the frons.

Remarks. This species can be easily distinguished from other species by the horns on the frons.

***Notopygus japonicus* sp. nov.**

(SJN: Nippon-magari-maru-himebachi)

(Figs. 5A–E, 38B, 40B, 41F, L, N)

Type series. **Holotype:** JAPAN, KPM-NK 84831, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Tanohara, 31. VII. 2013, S. Shimizu leg. **Paratype:** JAPAN, KPM-NK 91473, F, Yamanashi Pref., Hokuto City, Masutomi, Biwakubo-sawa, 28. VII. 2007, K. Watanabe leg.

Description. Female ($n = 2$). Body length 11.3–11.5 (HT: 11.5), polished and covered with punctures and brown setae.



Fig. 4. *Notopygus bicornis* sp. nov. (KPM-NK 81355, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron and metapleuron, lateral view; D: areolet; E: T II, dorso-lateral view.

Head 0.6–0.65 (HT: 0.65) \times as long as wide in dorsal view, punctate. Clypeus 3.5–3.6 (HT: 3.5) \times as broad as high, rather sparsely punctate, lower margin subtruncate (Fig. 40B), thick in lateral view. Face 2.3–2.5 (HT: 2.3) \times as broad as high, punctate reticulate, convex medially in lateral view. Frons weakly concave above antennal sockets, without a pair of horns (Fig. 38B). Dorsal profile of gena as Fig. 38B. Occipital carina complete. Occiput flat in front of dorso-median part of occipital carina. Length of malar space 0.2–0.25 (HT: 0.25) \times as long as basal width of mandible. POL 1.1–1.2 (HT: 1.1) \times as long as OD. OOL 1.1–1.35 (HT: 1.1) \times as long as OD. Antenna with 36–37 (HT: 37) flagellomeres. FL I 2.5–2.65 (HT: 2.65) \times as long as maximum depth, 1.1–1.25 (HT: 1.25) \times as long as FL II.

Mesosoma punctate. Pronotum densely punctate. Epomia short. Mesoscutum with short and weak notaulus. Mesopleuron with large smooth area around speculum (Fig. 5C). Epicnemial carina present laterally and ventrally. Propodeum punctate, all carinae present except for lateral sections of anterior transverse carina absent. Median section of anterior transverse carina weak (Fig. 41F). Area superomedia as long as wide, covered with weak irregular rugae (Fig. 41F). Fore wing length 9.0–9.3 (HT: 9.0) mm.

Areolet present, petiolated anteriorly, received vein 2m-cu slightly based of the outer angle (Fig. 5D). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 5A). Nervellus subvertical, intercepted slightly posterior the middle. Tarsal claws simple. Hind femur 3.7 \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 3.2: 2.0: 1.5: 0.9–1.0 (HT: 1.0): 1.0–1.1 (HT: 1.1). Hind tibia shorter than combined length of hind TS I, TS II, and TS III.

Metasoma finely punctate. T I 2.05–2.15 (HT: 2.15) \times as long as maximum width, latero-median carina present basal 0.75 of T I, area between latero-median carina with a strong concavity. T II 0.9–1.0 (HT: 0.9) \times as long as maximum width, a pair of longitudinal carinae present on basal 0.4 of T II (Fig. 5E). Posterior margins of T III to T VI each without notch (Fig. 41L). Posterior end T VIII weakly projected in lateral view (Fig. 41N). Ovipositor sheath 0.25 \times as long as hind tibia.

Colouration (Figs. 5A–E). Body (excluding wings and legs) black. Lower lateral sides of clypeus yellowish brown. Malar space and mandible except for teeth partly tinged with yellowish brown to brown. Palpi yellowish brown. Dorso-lateral corner of pronotum, antero-dorsal

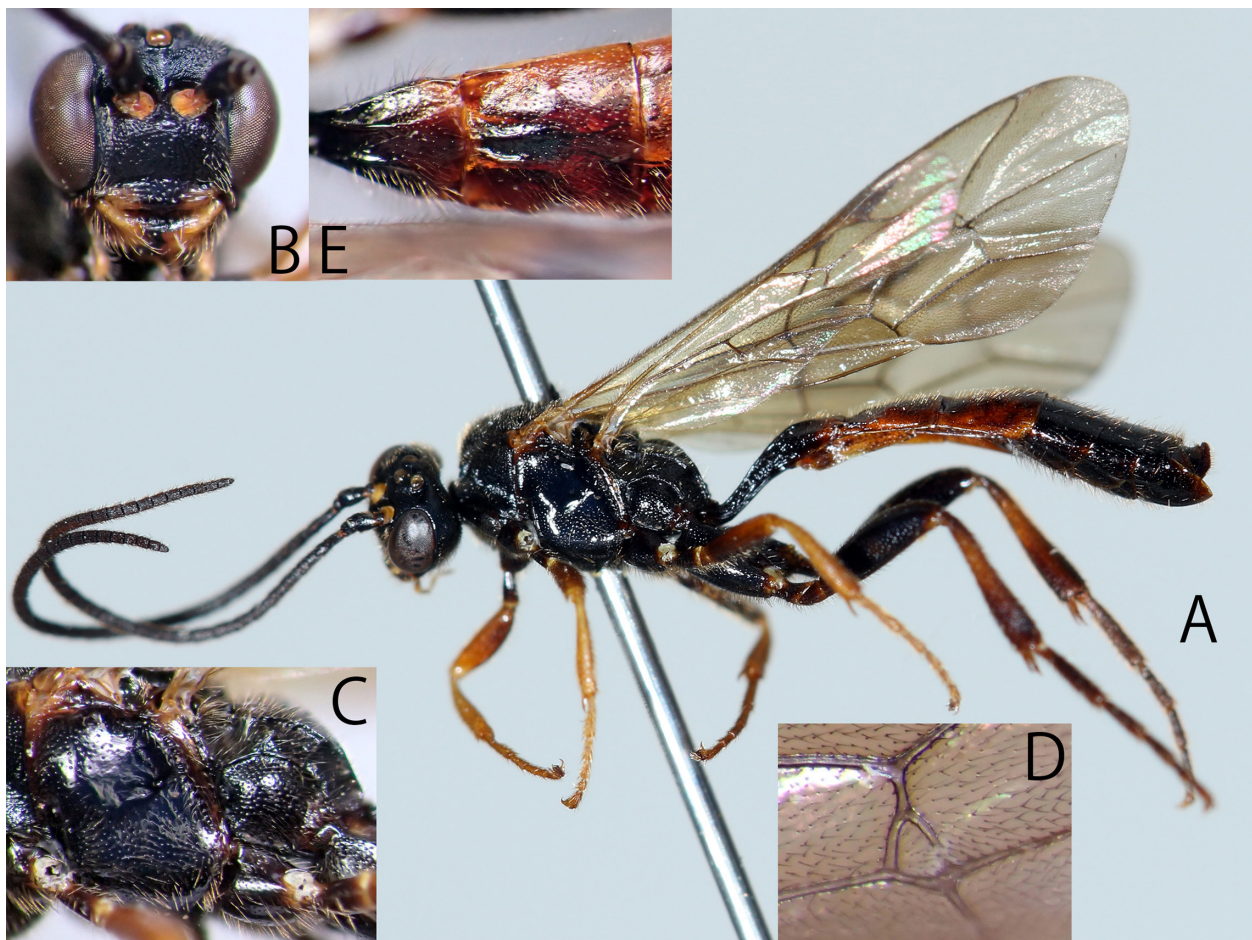


Fig. 5. *Notopygus japonicus* sp. nov. (A, C–E: KPM-NK 84831, holotype, female; B: KPM-NK 91473, paratype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron and metapleuron lateral view; D: areolet; E: T II, dorsolateral view.

corner of mesopleuron, and mesepimeron tinged with dark yellowish brown. Posterior part of T I, T II, and T III dark reddish brown. Sclerotized part of metasomal sternites partly tinged with dark reddish brown. Ovipositor yellowish brown. Wings brownish hyaline. Veins and pterostigma blackish brown except for yellowish-brown wing base. Fore and mid legs yellowish brown except for coxae and trochanters. Hind leg blackish brown to black, except for hind tibia largely reddish brown.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Japan.

Remarks. This species resembles *N. carpathicus* Kasparyan, 2002 but can be distinguished by the following combination of character states: length and maximum width of T II almost equal length (length shorter than maximum width in *N. carpathicus*); posterior margins of T III to T VI each without notch (each with notch in *N. carpathicus*); hind tibia shorter than combined length of hind TS I, TS II, and TS III (same length in *N. carpathicus*).

Tribe **Euryproctini** Thomson, 1883

Genus *Anisotacrus* Schmiedeknecht, 1913

Anisotacrus Schmiedeknecht, 1913: 2710. Type species: *Mesoleius tenellus* Holmgren, 1857 (= *Mesoleptus bipunctatus* Gravenhorst, 1829). Included by Schmiedeknecht (1913).

Four species, *An. albinotatus* Kasparyan, 2007, *An. iyoensis* (Uchida, 1953), *An. konishii* Kasparyan, 2007, and *An. kurilensis* Kasparyan, 2007, have been recorded from Japan. In this study, I describe two new species below.

Key to Japanese species of *Anisotacrus*

(modified from the key in Kasparyan & Khalaim (2007) and Sun *et al.* (2021a))

1. T I and hind coxa red. Face predominantly yellow. Mele unknown.

..... *Anisotacrus kurilensis* Kasparyan, 2007
-. T I black or red. Hind coxa black (Figs. 6A, 7A, F). Colouration of face various.

..... 2
2. Face black. Metasomal tergites, hind leg except for trochantellus black. T I 1.7 × as long as posterior width. Male unknown.

..... *Anisotacrus konishii* Kasparyan, 2007
-. Face more or less tinged with yellow or white (Figs.

6B, 7B, G). Metasomal tergites and hind leg at least partly reddish brown or yellow (Figs. 6A, 7A, F). T I at least 1.9 × as long as posterior width.

..... 3
3. Face and malar space white. Propleuron and epicnemium white to yellow. Hind coxa black, sometimes partly red. T II and subsequent tergites reddish brown (male: darker than female).

..... *Anisotacrus albinotatus* Kasparyan, 2007
-. Face black with yellow longitudinal stripes (Figs. 6B, 7B, G). Malar space, propleuron and epicnemium black (Figs. 6A, B, 7A, B, F, G). Colouration of hind coxa and metasomal tergites various.

..... 4
4. Ocelli large (Fig. 38C). Metasomal tergites black and each with narrow white posterior band (Fig. 6A). Face with a pair of yellow stripes along inner eye margin (Fig. 6B). Male unknown.

..... *Anisotacrus nocturnus* **sp. nov.**
-. Ocelli small and normal sized in the genus (Fig. 38D). Metasomal tergites partly (at least T III) red (Figs. 7A, F). Face with not only a pair of yellow stripes along inner eye margin but also median yellow area (Figs. 7B, G).

..... 5
5. T I largely reddish yellow posteriorly (Figs. 7A, F). T II to T VI reddish yellow (Figs. 7A, F). Hind trochanter reddish yellow. T I 2.0–2.15 × as long as maximum width.

..... *Anisotacrus pulchellus* **sp. nov.**
-. T I and T II black. T III and T IV partly reddish yellow. Hind trochanter black. T I approximately 3.0 × as long as maximum width. Female unknown.

..... *Anisotacrus iyoensis* (Uchida, 1953)

Anisotacrus nocturnus **sp. nov.**

(SJN: Kurayami-maru-himebachi)

(Figs. 6A–E, 38C, 40C)

Type series. Holotype: JAPAN, KPM-NK 84832, F, Yamanashi Pref., Sutama Town, Kanayamadaira, 25. VI. 2008, T. Kidokoro leg. (LT). **Paratypes:** JAPAN, KPM-NK 81350, F, same data of holotype; KPM-NK 84833, F, ditto, 28. VI. 2008, C. Satoh leg. (LT).

Description. Female (*n* = 3). Body length 8.2–8.8 (HT: 8.2) mm, polished and covered with silver setae.

Head 0.6 × as long as wide in dorsal view, finely coriaceous. Clypeus 2.35–2.5 (HT: 2.4) × as broad as high, sparsely punctate and polished, lower margin subtruncate medially (Fig. 40C). Face 1.75–1.8 (HT: 1.8) × as broad as high, weakly convex medially in lateral view. Frons

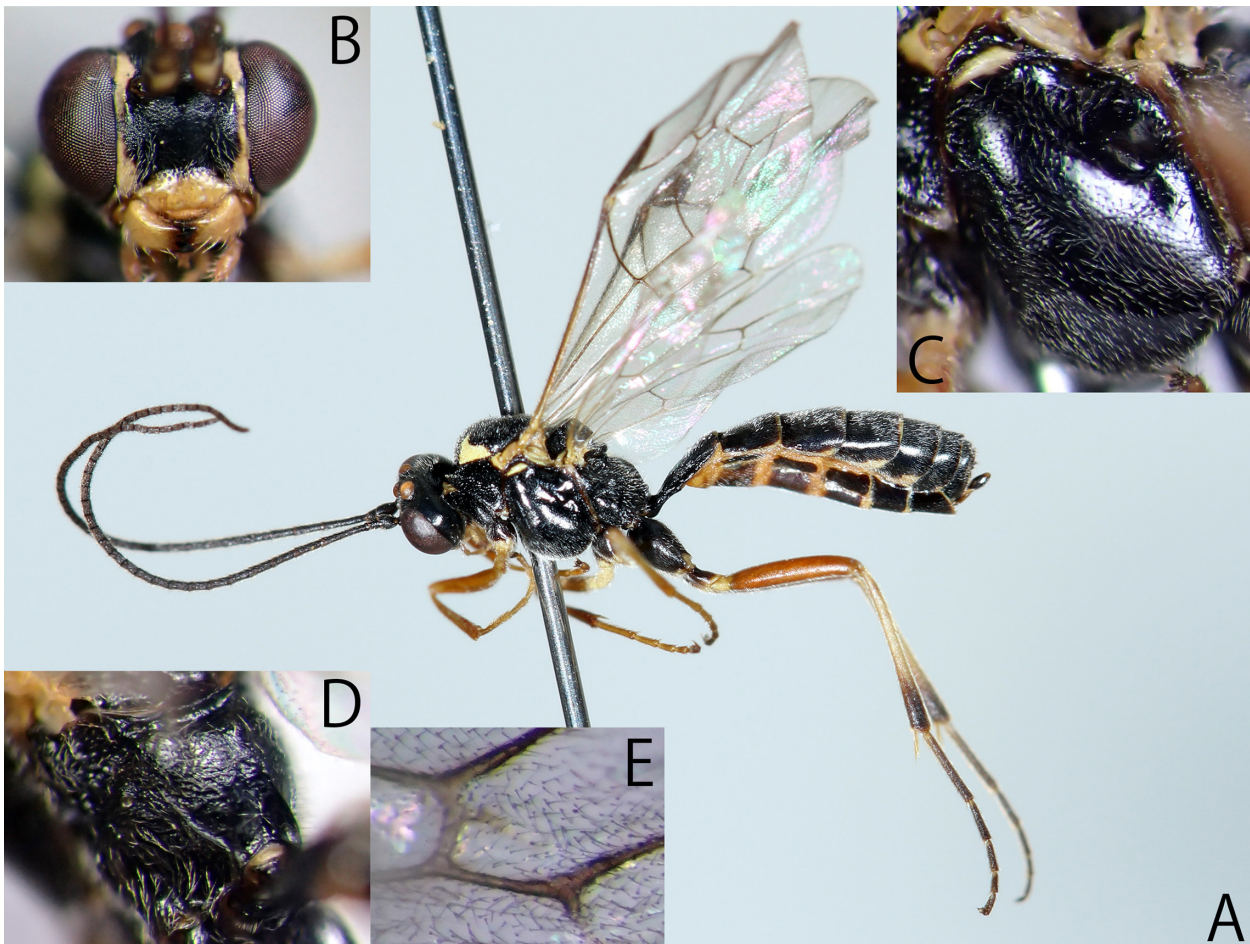


Fig. 6. *Anisotacrus nocturnus* sp. nov. (KPM-NK 84832, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron; D: propodeum, dorso-lateral view; E: areolet.

with a median shallow groove in front of median ocellus. Dorsal profile of gena as Fig. 38C. Occipital carina complete. Length of malar space $0.25\text{--}0.3$ (HT: 0.3) \times as long as basal width of mandible. Ocelli large (Fig. 38C). POL $0.7\text{--}0.75$ (HT: 0.7) \times as long as OD. OOL $0.45\text{--}0.5$ (HT: 0.5) \times as long as OD. Antenna with $34\text{--}36$ (HT: 34) flagellomeres. FL I $5.7\times$ as long as maximum depth, $1.65\times$ as long as FL II.

Mesosoma finely punctate and polished. Epomia absent. Mesoscutum with weak notaulus. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with large smooth area (Fig. 6C). Propodeum finely punctate and coriaceous. Lateromedian longitudinal carina and lateral longitudinal carina absent anteriorly (Fig. 6D). Anterior transverse carina absent. Posterior transverse carina narrowly absent medially. Pleural carina weak. Area petiolaris smooth and $0.5\times$ as long as dorsal length of propodeum. Fore wing length $7.5\text{--}7.6$ (HT: 7.6) mm. Areolet present, shortly petiolated anteriorly, received vein 2m-cu slightly based of the outer angle (Fig. 6E). Fore wing vein 1cu-a interstitial to vein M&RS (Fig. 6A).

Nervellus inclivous, intercepted posterior the middle. Tarsal claws simple. Hind femur $5.6\text{--}6.35$ (HT: 6.0) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres $4.0\text{--}4.3$ (HT: 4.1): 2.0 : $1.45\text{--}1.6$ (HT: 1.4): $0.9\text{--}1.0$ (HT: 0.95): $0.95\text{--}1.0$ (HT: 1.0).

Metasoma coriaceous. T I $1.9\text{--}2.0$ (HT: 2.0) \times as long as maximum width. T II $0.85\text{--}0.95$ (HT: 0.95) \times as long as maximum width. Ovipositor sheath $0.175\text{--}0.2$ (HT: 0.2) \times as long as hind tibia.

Colouration (Figs. 6A–E). Body (excluding wings and legs) black. A pair of markings along frontal orbit and facial orbit, malar space, clypeus, mandible except for teeth, postero-dorsal and postero-ventral corners of pronotum, a pair of large markings of antero-lateral part of mesoscutum, tegula, and subtegular ridge yellow. Posterior margins of metasomal tergites narrowly tinged with yellow. Posterior corners of T III to T VI with whitish yellow marking. Membranous part of metasomal sternites, whitish yellow. Face sometimes with a pair of short longitudinal yellow stripes below antennal sockets. Wings hyaline. Veins and pterostigma blackish brown except for yellowish-brown wing base. Coxae and hind trochanter

black (apices of fore and mid coxae usually with small yellow area). Fore and mid trochanters and trochantelli yellow. Fore and mid femora, tibiae, tibial spurs, and tarsi reddish yellow. Hind tibia and tibial spurs whitish yellow except for apical part of the former blackish brown. Hind tarsus blackish brown to black.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Host is unknown. This species has large ocelli and collected by right trap. Thus, this species may be active in night.

Etymology. The specific name is from Latin “*nocturnus*”. This species has nocturnal habit.

Remarks. This species can be easily distinguished from other species by the large ocelli and body colouration.

***Anisotacrus pulchellus* sp. nov.**

(SJN: Hime-maru-himebachi)

(Figs. 7A–G, 38D, 40D)

Type series. **Holotype:** JAPAN, KPM-NK 84834, F, Hyogo Pref., Tatsuno C., Shingu Town, Sano, riverside of Ibogawa, 22. IV. 2019, K. Watanabe leg. **Paratypes:** JAPAN, KPM-NK 84841, F, Aomori Pref., Higashidori Town, Gamanosawa, 27. V. 2012, S. Fujie leg.; KPM-NK 84839, 84840, Osaka Pref., Takatsuki City, Akitagawa-ryokuchi, 30 IV. 2011, S. Fujie leg.; OMNH, 1 F & 1 M, ditto; KPM-NK 84837, 84838, 1 F & 1 M, Ehime Pref., Saijo Town, Teizui, Kamo-jinja, 4. V. 2012, S. Fujie leg.; KPM-NK 84836, Ehime Pref., Saijo Town, Nakaoku, 5. V. 2012, S. Fujie leg.

Description. Female ($n = 5$). Body length 6.25–6.9 (HT: 6.9) mm, polished and covered with silver setae.

Head $0.65 \times$ as long as wide in dorsal view. Clypeus $3.0 \times$ as broad as high, sparsely punctate and polished, lower margin rounded (Fig. 40D). Face 1.6 – 1.8 (HT: 1.75) \times as broad as high, punctate reticulate, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 38D. Frons matt and punctate, with a median shallow groove in front of median ocellus. Occipital carina complete. Length of malar space 0.5 – 0.6 (HT: 0.6) \times as long as basal width of mandible. Ocelli small (Fig. 38D). POL 1.1 – 1.25 (HT: 1.25) \times as long as OD. OOL 1.8 – 2.1 (HT: 1.95) \times as long as OD. Antenna with 33–34 (HT: 34) flagellomeres. FL I $5.7 \times$ as long as maximum depth, $1.65 \times$ as long as FL II.

Mesosoma. Pronotum punctate dorsally, rugose ventrally, without epomia. Mesoscutum punctate, with weak notaulus, area around notaulus partly rugulose. Scutellum finely and sparsely punctate. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Mesopleuron with

oblique and transverse rugae near speculum (Fig. 7C). Speculum with large smooth area (Fig. 7C). Propodeum irregularly rugulose (Fig. 7D). Lateromedian longitudinal carina present except for posterior part, largely subparallel. Lateral longitudinal carina absent anteriorly. Anterior transverse carina and posterior transverse carina absent. Area petiolaris united with area superomedia. Fore wing length 5.1 – 5.5 (HT: 5.3) mm. Areolet present, shortly petiolated anteriorly, received vein 2m-cu slightly based of the outer angle (Fig. 7E). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus inclivous, intercepted posterior the middle. Tarsal claws simple. Hind femur 4.4 – 4.5 (HT: 4.4) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 3.8 – 4.0 (HT: 3.8): 2.0 : 1.4 – 1.6 (HT: 1.4): 1.0 – 1.1 (HT: 1.0): 1.3 .

Metasoma matt. T I 2.0 – 2.15 (HT: 2.0) \times as long as maximum width, base of spiracle weakly convex. T II 0.75 – 0.85 (HT: 0.85) \times as long as maximum width. Ovipositor sheath $0.2 \times$ as long as hind tibia.

Colouration (Figs. 7A–E). Body (excluding wings and legs) black. A pair of markings along frontal orbit, a pair of large triangle markings of face, mandible except for teeth, ventral sides of scape and pedicel, postero-dorsal corner of pronotum, and tegula yellow. Lower part of clypeus, palpi, and flagellum yellowish brown. Malar space sometimes weakly tinged with yellow. Metasoma reddish brown except for base of T I, subapical part of T I, basal part of SI, T V to T VII more or less tinged with blackish brown. Wings hyaline. Veins and pterostigma brown to yellowish brown except for yellow wing base. Fore and mid legs reddish brown except for coxae, trochanters and trochantelli partly to entirely yellow. Hind coxa black except for apex narrowly tinged with yellowish white. Hind trochanter and femur reddish yellow to reddish brown. Hind trochantellus, tibia, and tibial spurs whitish yellow except for apical part of tibia blackish brown. Hind tarsus blackish brown, usually base of TS I more or less tinged with whitish yellow.

Male ($n = 3$). Similar to female. Clypeus 2.5 – $2.8 \times$ as broad as high. Face 2.0 – $2.05 \times$ as broad as high. OOL 1.55 – $1.7 \times$ as long as OD. T II 0.9 – $1.0 \times$ as long as maximum width. FL I 5.0 – $5.7 \times$ as long as maximum depth, 1.6 – $1.65 \times$ as long as FL II. Hind femur 4.45 – $4.8 \times$ as long as maximum depth in lateral view. Dorsal part of clypeus yellow (Fig. 7G). Yellow area of face and fore and mid coxae larger than female. Reddish brown area of metasoma smaller than female, T I, T V to T VII usually nearly entirely blackish brown to black (Fig. 7F).

Distribution. Japan (Honshu and Shikoku).

Bionomics. Host unknown. Holotype collected in open



Fig. 7. *Anisotacrus pulchellus* sp. nov. (A–E: KPM-NK 84834, holotype, female; F, G: KPM-NK 84838, paratype, male) — A, F: lateral habitus; B, G: head, frontal view; C: mesopleuron; D: propodeum, dorsal view; E: areolet.

riverbed grassland.

Etymology. The specific name is from Latin “*pulchellus*” (pretty and beautiful).

Remarks. This species resembles *An. iyoensis* but can be distinguished by the TI 2.0–2.15 × as long as maximum width (approximately 3.0 × in *An. iyoensis*) and the colouration (see above key).

Genus *Euryproctus* Holmgren, 1857

Euryproctus Holmgren, 1855: 109. Type species: *Mesoleptus annulatus* Gravenhorst, 1829. Designated by Viereck (1912).

Sychnoleter Förster, 1869: 197. Type species: *Mesoleptus geniculosus* Gravenhorst, 1829. Designated by Thomson (1889).

Hypocryptus Förster, 1869: 198. Type species: *Mesoleptus (Hypocryptus) testaceicornis* Brischke, 1892 (= *Ichneumon mundus* Gravenhorst, 1820). Included by Brischke (1892).

Xenonastes Förster, 1869: 208. Type species: *Euryproctus alpinus* Holmgren, 1857. Designated by Townes *et al.* (1965).

Fovaya Cameron, 1903: 341. Type species: *Fovaya*

annulicornis Cameron, 1903. Monotypic.

Two species, *E. annulatus* (Gravenhorst, 1829) and *E. japonicus* (Ashmead, 1906), have been recorded from Japan. In this study, I redescribe the latter species and describe a new species below.

Key to Japanese species of *Euryproctus*

1. Mesosoma and metasoma entirely black (Fig. 8A). Legs black except for several white segments of hind tarsus (Fig. 8A). Large species, body length usually longer than 8.0 mm. Base of mandible flat.

..... *Euryproctus annulatus* (Gravenhorst, 1829)
-. Tegula sometimes tinged with yellow (Figs. 9A, F, 10F). Metasomal tergites at least partly red (Figs. 9A, F, 10A, F). Hind leg with yellowish brown and reddish brown areas (Figs. 9A, F, 10A, F). Small species, body length usually shorter than 8.0 mm. Base of mandible convex or flat.

..... 2
2. Base of mandible flat. Speculum densely coriaceous and almost dull (Fig. 9C). Face black with a conspicuous reverse T-shaped red marking in female (Fig. 9B).

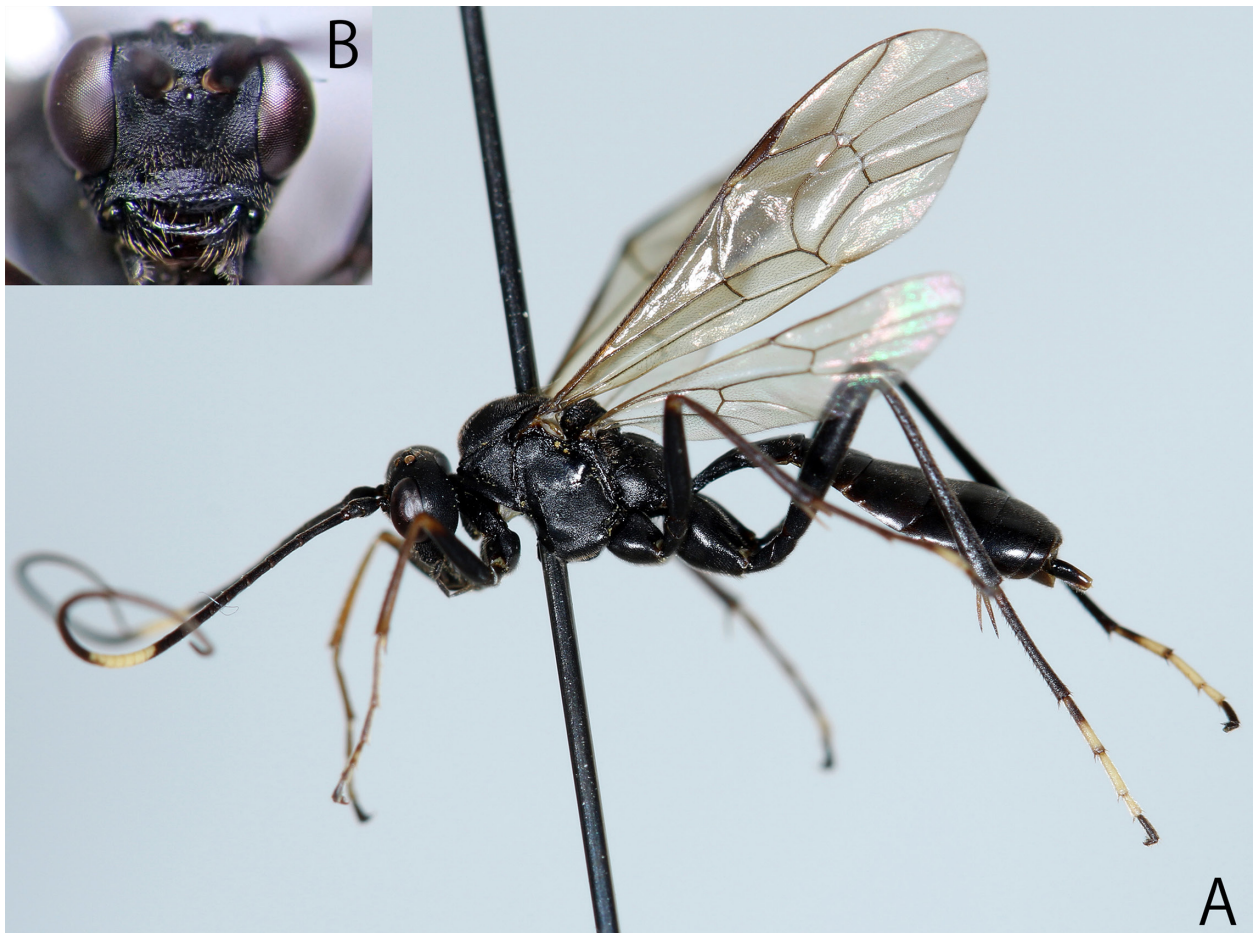


Fig. 8. *Euryproctus annulatus* (Gravenhorst, 1829) (A, B: KPM-NK 84820, female) — A: lateral habitus; B: head, frontal view.

Tegula yellow in female (Fig. 9A). Mesoscutum with a pair of yellow spots in male (Fig. 9F).

..... *Euryproctus flavidens* sp. nov.
 -. Base of mandible convex (Fig. 41A). Speculum coriaceous and largely polished (Fig. 10C). Face entirely black in female (Fig. 10B). Tegula blackish brown in female (Fig. 10A). Mesoscutum without yellow spots in male (Fig. 10F).

..... *Euryproctus japonicus* (Ashmead, 1906)

Euryproctus annulatus (Gravenhorst, 1829)

(SJN: Higejiro-kuro-maru-himebachi)

(Figs. 8A, B)

Mesoleptus annulatus Gravenhorst, 1829: 11.

Mesoleptus annulator Stephens, 1835: 223.

Description. See Sheng *et al.* (2020).

Materials examined. JAPAN: KPM-NK 84818, F, Hokkaido, Horokanai Town, Uryu, 11–17. VII. 2012, K. Watanabe *et al.* leg. (MsT); KPM-NK 84819, M, Aomori Pref., Nishimeya Vil., Kawaratai, 28. IX. – 19. X. 2010, T. Nakamura leg. (MsT); KPM-NK 84820, F, Gunma Pref., Tsumagoi Vil., Takamine-kogen, 3. IX. 2015, K. Watanabe leg.; KPM-NK 84821, M, Tochigi Pref., Kuroiso Town, Ohkawa F. R., 6. X. 2001, E. Katayama leg.; KPM-NK 84822, F, Kanagawa Pref., Atsugi City, Funako, 6. V. – 7. VI. 2016, Y. Kato & S. Koizumi leg. (MsT); KPM-NK 84823, F, Toyama Pref., Toyama City, Arimine, Jyurodani, 4–11. VIII. 2009, M. Watanabe *et al.* leg. (MsT); KPM-NK 84824, F, ditto, 16–25. VIII. 2009; KPM-NK 84825, F, ditto, 15–22. IX. 2009. GERMANY: MNHAH, F (det. Heinrich), Hohnheide b. Trittau Bez. Hamburg, IX. 1945, G. Heinrich leg.; ZSM, F (det. E. Bauer), Allgäu, Riezler, 26. VIII. 1953, A. Peters leg.; ZSM, M (det. R. Bauer), Oberstdorf, 1. IX. 1969.

Distribution. Japan (Hokkaido and Honshu); widely distributed in Palearctic region.

Bionomics. Unknown in Japan. In Europe, three sawflies, *Macrophya ribis* (Schrank, 1781), *Rhogogaster viridis* (Linnaeus, 1758), and *Siobla sturmii* (Klug, 1817) (all Tenthredinidae), were recorded as hosts (Rudow, 1919; Hinz, 1961).

Remarks. This is the first record of this species from Honshu.

***Euryproctus flavidens* sp. nov.**

(SJN: Dote-maru-himebachi)

(Figs. 9A–G, 38E, 40E)

Type series. Holotype: JAPAN, KPM-NK 84842, F, Kanagawa Pref., Nakai Town, Zoushiki, 19. V. 2017, K. Watanabe leg. **Paratypes:** JAPAN, KPM-NK 84843, 84844, 2 M, Saitama Pref., Ranzan Town, Yoshida, 11. V. 2002, T. Nambu leg.; KPM-NK 84845, F, Tokyo, Oume City, Mt. Otsuka-yama, 31. V. 2008, K. Watanabe leg.; KPM-NK 84846–84848, 3 M, same data of holotype; KPM-NK 84849, M, Kanagawa Pref., Atsugi City, Nakaogino, 9. V. 2007, K. Watanabe leg.; KPM-NK 84850, F, Kanagawa Pref., Hadano City, Naganuki, 16. V. 2018, T. Amano leg.; KPM-NK 84851, F, Kanagawa Pref., Hadano City, Chimura, Mt. Zukko-yama, 20. V. 2015, K. Watanabe leg.; KPM-NK 84852–84854, 3 M, Kanagawa Pref., Odawara City, Kamisoga, 29. IV. 2017, K. Watanabe leg.; KPM-NK 84855, F, ditto, 29. IV. 2018, T. Amano leg.; KPM-NK 84856, F, Fukui Pref., Imajo Town, Kinometouge, 21. VI. 1981, H. Kurokawa leg.

Description. Female ($n = 6$). Body length 8.2–8.5 (HT: 8.5) mm, matt and covered with silver setae.

Head 0.65–0.7 (HT: 0.67) \times as long as wide in dorsal view. Clypeus 2.7–2.8 (HT: 2.7) \times as broad as high, sparsely punctate, lower margin rounded (Fig. 40E), thick in lateral view. Face 2.0 \times as broad as high, flat, densely punctate. Dorsal profile of gena as Fig. 38E. Occipital carina complete. Length of malar space 0.85–1.0 (HT: 0.9) \times as long as basal width of mandible. Base of mandible flat. POL 0.7–0.75 (HT: 0.75) \times as long as OD. OOL 1.5–1.8 (HT: 1.5) \times as long as OD. Antenna with 48–49 (HT: 49) flagellomeres. FL I 5.7–6.65 (HT: 5.7) \times as long as maximum depth, 1.55–1.65 (HT: 1.6) \times as long as FL II.

Mesosoma largely pustulate. Epomia absent. Mesoscutum with weak notaulus. Epicnemial carina present laterally and ventrally. Speculum with a small smooth area (Fig. 9C). Mesopleuron with oblique rugae in front of speculum (Fig. 9C). Propodeum with all carinae except for anterior transverse carina. Lateromedian longitudinal carina and lateral longitudinal carina obscured anteriorly (Fig. 9D). Fore wing length 7.0–7.7 (HT: 7.7) mm. Areolet present, shortly petiolated, received vein 2m-cu slightly based of the outer angle (Fig. 9E). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical, intercepted slightly anterior the middle. Tarsal claws pectinate. Hind femur 5.1–5.4 (HT: 5.4) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.0–4.2 (HT: 4.2): 2.0: 1.5: 0.9: 1.0.

Metasoma. T I 2.0–2.2 (HT: 2.0) \times as long as maximum width. T II 0.75–0.85 (HT: 0.75) \times as long as maximum width. Ovipositor sheath 0.175 \times as long as hind tibia.

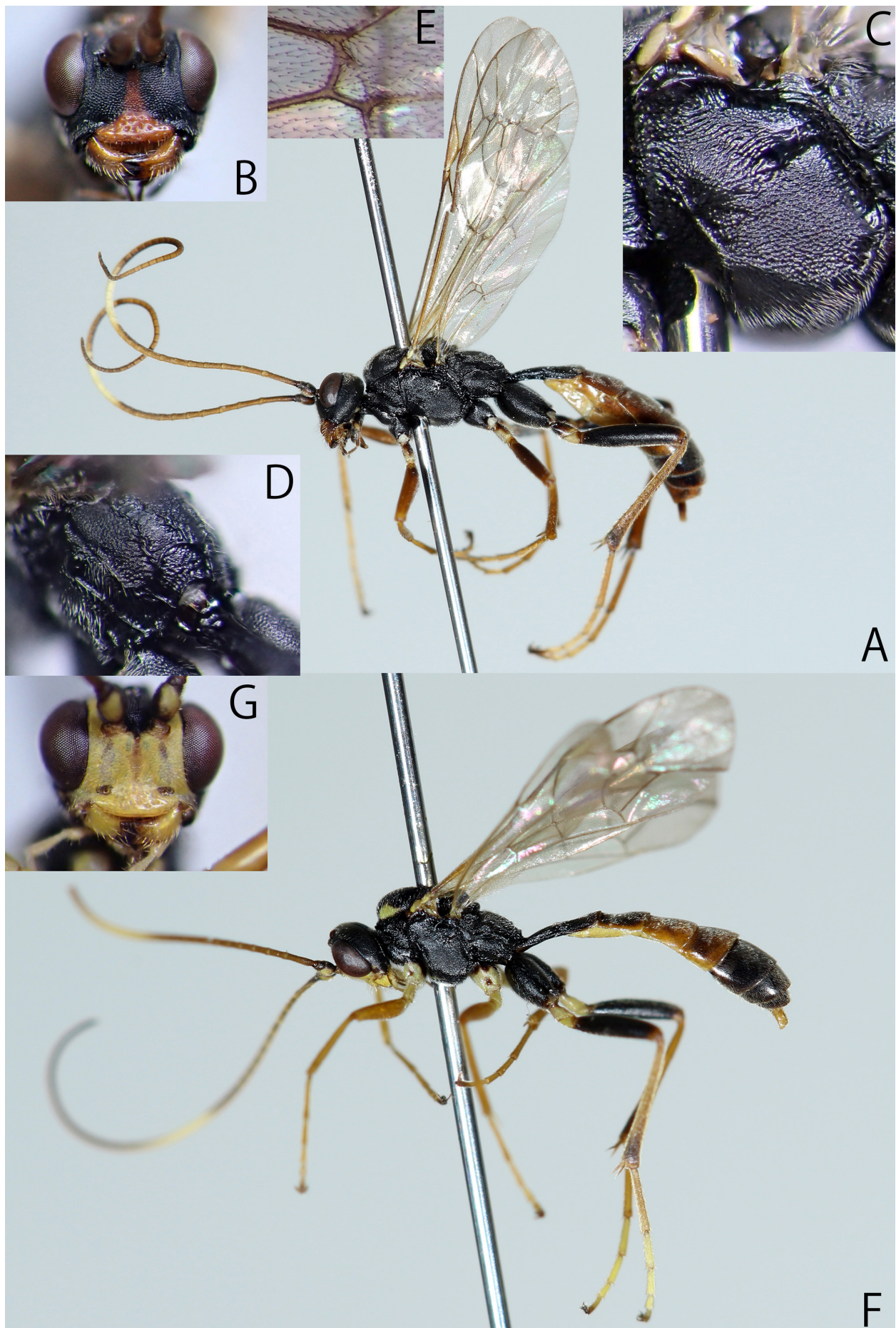


Fig. 9. *Euryproctus flavidens* sp. nov. (A–E: KPM-NK 84842, holotype, female; F, G: KPM-NK 84854, paratype, male) — A, F: lateral habitus; B, G: head, frontal view; C: mesopleuron; D: propodeum, dorso-lateral view; E: areolet.

Colouration (Figs. 9A–E). Body (excluding wings and legs) black. Antenna with a white band. A median reverse T-shaped spot of face, clypeus, ventral surfaces of scape and pedicel, and flagellum except for a white band reddish yellow to reddish brown. Mandible except for teeth, palpi, tegula, and membranous part of metasomal sternites yellow to yellowish brown. Posterior margin of T I, T II to T IV reddish brown to red. T V to T VII and ovipositor sheath more or less tinged with reddish brown. T I sometimes entirely black. T II sometimes with a black area. Wings hyaline. Veins and pterostigma brown to yellowish brown except for yellow wing base. Coxae black. Trochanters black with whitish yellow area(s). Trochantelli whitish yellow. Femora, tibiae, tibial spurs, and tarsi brown to brownish yellow except for hind femur blackish brown to black. Fore and mid femora and apical part of hind tibia more or less darkened. Hind TS III and TS IV usually tinged with whitish yellow.

Male ($n = 9$). Similar to female. Body length usually slightly shorter than female (minimum specimen: 7.5 mm). Length of malar space $0.7\text{--}0.8 \times$ as long as basal width of mandible. POL $0.6\text{--}0.7 \times$ as long as OD. OOL $1.4 \times$ as long as OD. Antenna with 45–49 flagellomeres. Hind femur $4.8\text{--}5.0 \times$ as long as maximum depth in lateral view. T I $2.5 \times$ as long as maximum width. T II $0.95\text{--}1.0 \times$ as long as maximum width. A pair of longitudinal markings of frontal orbit, face, malar space, clypeus, mandible except for teeth, ventral surface of scape, and a pair of triangle markings of antero-lateral corner of mesoscutum yellow (Figs. 9 F, G). Fore and mid coxae largely yellow (Fig. 9F). T II usually largely black.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from the Latin “*flavi-*” (yellow) plus “*dens*” (mandible), which means yellow mandible.

Remarks. This species resembles *E. nemoralis* (Geoffroy, 1785) in body structure and colouration (e.g., antenna with white band), but can be distinguished by the whitish yellow hind trochantellus (blackish brown in *E. nemoralis*), the speculum with a small smooth area (rather large smooth area in *E. nemoralis*), the mesopleuron with oblique rugae anterior to the speculum (without conspicuous rugae in *E. nemoralis*), the whitish yellow female tegula (blackish brown in female of *E. nemoralis*), and the yellow face of male (black in male of *E. nemoralis*). In Japanese species, this species is similar to *E. japonicus*, but can be easily distinguished by the flat base of the mandible (convex in *E. japonicus*).

***Euryproctus japonicus* (Ashmead, 1906)**

(SJN: Ezo-maru-himebachi)

(Figs. 10A–G, 41 A)

Sychnoleter japonicus Ashmead, 1906: 182.

Description. Female ($n = 1$). Body length 6.3 mm, matt and covered with silver setae.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $3.0 \times$ as broad as high, polished and sparsely punctate ventrally, lower margin rounded, thick in lateral view. Face $1.8 \times$ as broad as high, flat. Occipital carina complete. Length of malar space $0.9 \times$ as long as basal width of mandible. Base of mandible with a conspicuous convexity (Fig. 41A). POL $1.0 \times$ as long as OD. OOL $1.55 \times$ as long as OD. Antenna with 42 flagellomeres. FL I $5.7 \times$ as long as maximum depth, $1.55 \times$ as long as FL II.

Mesosoma. Epomia absent. Mesoscutum with weak notaulus. Epicnemial carina present laterally and ventrally. Speculum with a small smooth area (Fig. 10C). Mesopleuron with fine oblique rugae below subtegular ridge (Fig. 10C). Propodeum with all carinae except for anterior transverse carina (Fig. 10D). Lateral longitudinal carina obscured anteriorly. Fore wing length 6.2 mm. Areolet present but vein 3rs-m largely indistinct, not petiolated, received vein 2m-cu near the middle (Fig. 10E). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical, intercepted slightly anterior the middle. Tarsal claws pectinate. Hind femur $5.2 \times$ as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.5: 2.0: 1.5: 0.9: 1.0.

Metasoma. T I $1.8 \times$ as long as maximum width. T II $0.6 \times$ as long as maximum width. Ovipositor sheath $0.2 \times$ as long as hind tibia.

Colouration (Figs. 10A–E). Body (excluding wings and legs) black. Antenna with a white band. Lower part of clypeus, ventral surfaces of scape and pedicel, palpi, postero-dorsal corner of pronotum, and tegula reddish brown. Flagellum except for a white band yellowish brown to dark brown. Posterior margin of T I, T II to T IV, and membranous part of metasomal sternites reddish brown to red. Wings hyaline. Veins and pterostigma brown to yellowish brown except for yellow wing base. Hind tibia yellowish brown basally, blackish brown apically. Legs yellowish brown to blackish brown. Coxae, hind trochanter, and hind femur black. Hind TS II to TS IV white.

Male ($n = 2$). Similar to female. Body length slightly shorter than female (minimum specimen: 5.7 mm). Clypeus $2.75\text{--}3.0 \times$ as broad as high. Length of malar space $0.65\text{--}0.7 \times$ as long as basal width of mandible. Fore

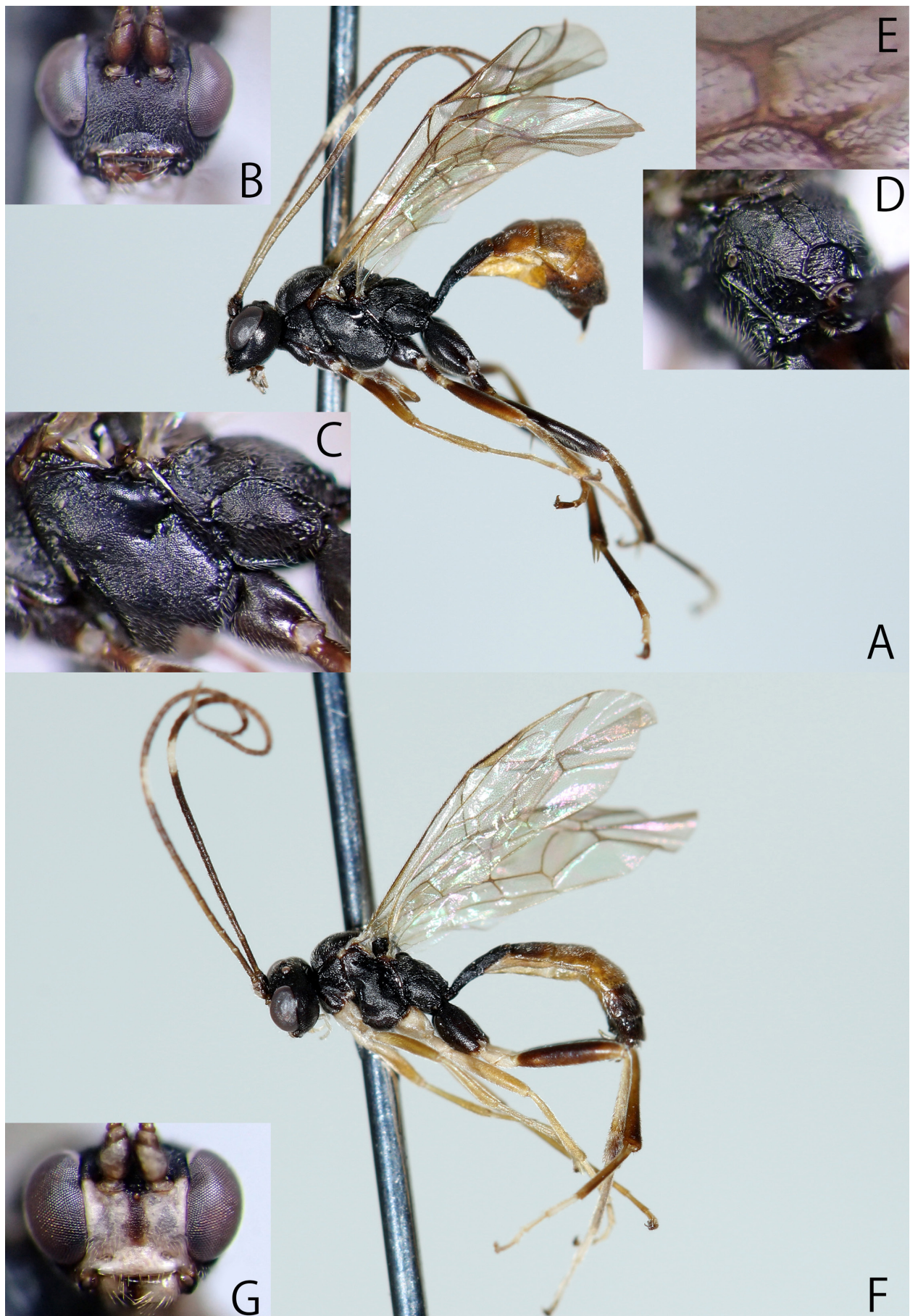


Fig. 10. *Euryproctus japonicus* (Ashmead, 1906) (A–E: KPM-NK 84826, female; F, G: KPM-NK 84828, male) — A, F: lateral habitus; B, G: head, frontal view; C: mesopleuron and metapleuron; D: propodeum, dorso-lateral view; E: areolet.

wing vein 1cu-a interstitial or slightly postfurcal to vein M&RS. Ratio of length of hind first to fifth tarsomeres 4.3–4.5: 2.0: 1.3–1.35: 0.8: 0.9. T I 2.1–2.3 × as long as maximum width. T II 0.85 × as long as maximum width. Face except for a median black stripe, malar space, clypeus, mandible except for teeth, ventral surface of scape, postero-dorsal corner of pronotum, and tegula whitish yellow (Figs. 10 F, G). Coxae, trochantellus, and trochantelli except for hind coxa white to whitish yellow (Fig. 10F).

Materials examined. JAPAN: KPM-NK 84826–84828, 1 F & 2 M, Hokkaido, Sapporo City, Mt. Soranuma-dake, 14. VI. – 4. VII. 2007, A. Ueda leg. (MsT).

Distribution. Japan (Hokkaido).

Bionomics. Unknown.

Remarks. This is the second record of this species and the first record of the male of this species.

Genus *Mesoleptidea* Viereck, 1912

Mesoleptidea Viereck, 1912: 176. Type species: *Mesoleptus cingulatus* Gravenhorst, 1829. Original designation.

Gnathonophorus Schmiedeknecht, 1912: 2519. Type species: *Gnathonophorus moricei* Schmiedeknecht, 1913. Included by Schmiedeknecht (1913).

This is the first record of this genus from Japan. In this study, I describe three new species and record one species new to Japan, *Mesolep. maculata* Sheng, Sun & Li, 2020, below.

Key to Japanese species of *Mesoleptidea*

1. Areolet absent. Mesoscutum entirely black in female (Fig. 12A). Hind coxa red (Fig. 12A).

..... *Mesoleptidea japonica* **sp. nov.**
-. Areolet present (Figs. 11F, 13E, 14E). Mesoscutum with antero-lateral yellow markings in female (Figs. 11A, 13A, 14A). Hind coxa black or red.

..... 2
2. Interspace of punctures of mesopleuron and propodeum smooth and polished (Figs. 11C, E). Dorsal surface of propodeum with a conspicuous smooth area in female (Fig. 11E). Anterior margin of clypeus more or less concave medially (Fig. 40F). Hind coxa black dorsally in female (Fig. 11A) or entirely in male (Fig. 11G). Mesoscutum black with a pair of antero-lateral yellow markings (Figs. 11A, G).

..... *Mesoleptidea amanoi* **sp. nov.**
-. Interspace of punctures of mesopleuron and

propodeum granulate or dull (Figs. 13D, 14D). Dorsal surface of propodeum without a conspicuous smooth area in female (Figs. 13D, 14D). Anterior margin of clypeus rounded or concave medially. Hind coxa black or red. Mesoscutum black or red with a pair of antero-lateral yellow markings.

..... 3
3. Mesoscutum black or black plus red except for antero-lateral yellow markings (Fig. 13A). Scutellum black. Anterior margin of clypeus concave medially (Fig. 40H). Metapleuron without distinct punctures (Fig. 13C). Hind coxa black with white ventral area (Fig. 13A).

..... *Mesoleptidea maculata* Sheng, Sun & Li, 2020
-. Mesoscutum entirely reddish brown except for antero-lateral yellow markings (Fig. 14A). Scutellum yellow. Anterior margin of clypeus rounded (Fig. 40I). Metapleuron with distinct punctures (Fig. 14C). Hind coxa red (Fig. 14A).

..... *Mesoleptidea mesorufa* **sp. nov.**

Mesoleptidea amanoi **sp. nov.**

(SJN: Amano-hoso-maru-himebachi)

(Figs. 11A–G, 38F, 40F)

Type series. Holotype: JAPAN, KPM-NK 84857, F, Kanagawa Pref., Hadano City, Naganuki, 9. VI. 2018, T. Amano leg. **Paratype:** JAPAN, KPM-NK 84858, M, same data of holotype except for 1. VI. 2019.

Description. Female ($n = 1$). Body length 10.5 mm, polished and covered with punctures and silver setae.

Head $0.65 \times$ as long as wide in dorsal view. Clypeus $2.7 \times$ as broad as high, rather sparsely punctate ventrally, lower margin with a weak convexity above median shallow concavity (Fig. 40F). Face $1.6 \times$ as broad as high, matt, flat in lateral view. Dorsal profile of gena as Fig. 38F. Occipital carina complete. Length of malar space $0.75 \times$ as long as basal width of mandible. POL $0.9 \times$ as long as OD. OOL $1.3 \times$ as long as OD. Antenna with 36 flagellomeres. FL I $6.65 \times$ as long as maximum depth, $1.65 \times$ as long as FL II.

Mesosoma. Epomia absent. Mesoscutum with weak and shallow notaulus. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with large smooth area (Fig. 11C). Interspace of punctures of mesopleuron and propodeum smooth and polished (Figs. 11C, E). Metapleuron with distinct punctures (Fig. 11D). Propodeum with longitudinal smooth area dorsally, without carinae except for pleural carina (Fig. 11E). Fore wing length 8.4 mm. Areolet present, shortly

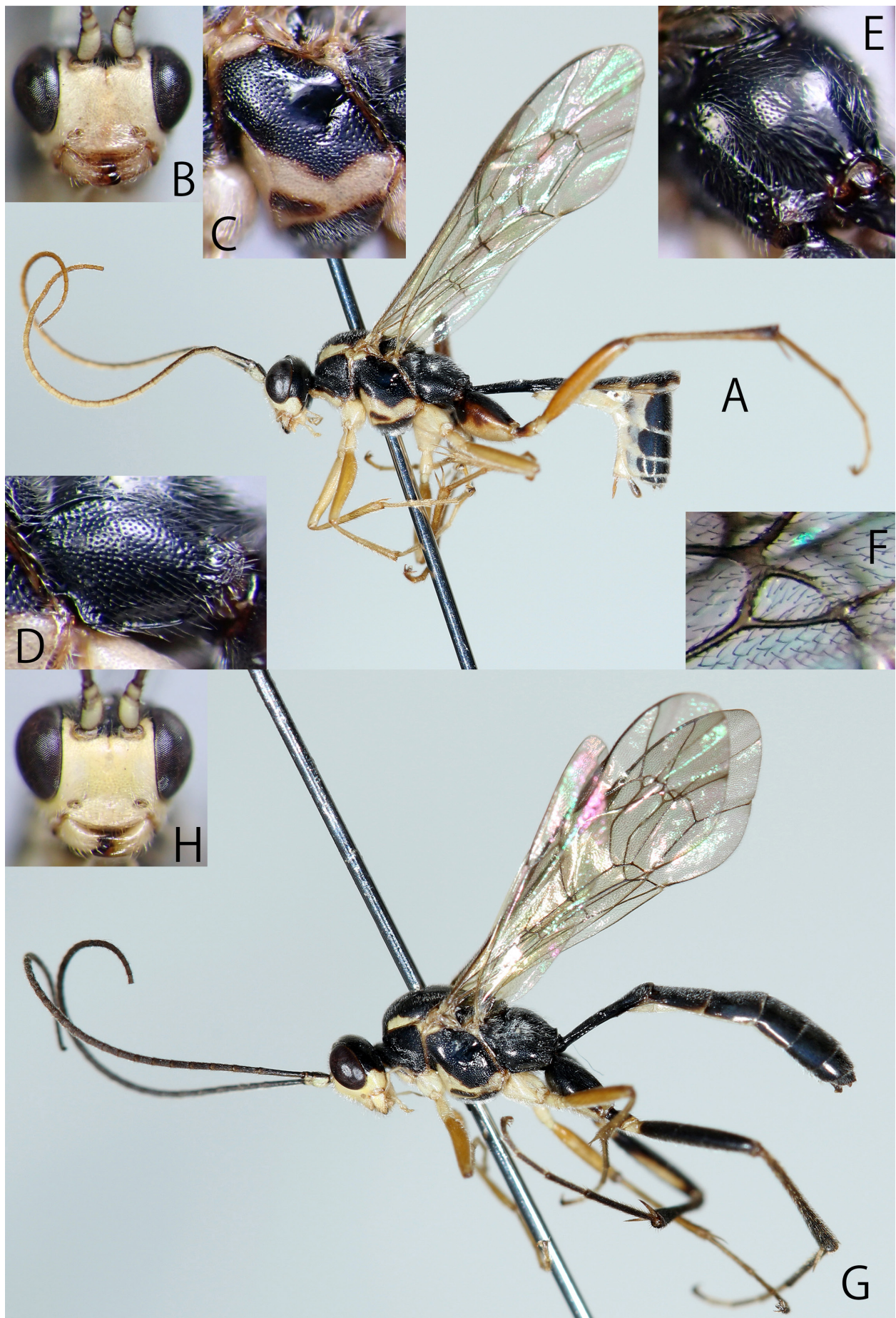


Fig. 11. *Mesoleptidea amanoi* **sp. nov.** (A–F: KPM-NK 84857, holotype, female; G: KPM-NK 84858, paratype, male) — A, G: lateral habitus; B, H: head, frontal view; C: mesopleuron; D: metapleuron; E: propodeum, dorso-lateral view; F: areolet.

petiolated anteriorly, received vein 2m-cu near the outer angle (Fig. 11F). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical, intercepted posterior the middle. Tarsal claws simple. Hind femur $6.1 \times$ as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 3.8: 2.0: 1.5: 0.9: 0.9.

Metasoma finely punctate. T I $3.4 \times$ as long as maximum width. T II $1.3 \times$ as long as maximum width. Ovipositor sheath $0.15 \times$ as long as hind tibia.

Colouration (Figs. 11A–F). Body (excluding wings and legs) black. A pair of markings of frontal orbit, face, clypeus, malar space, mandible except for teeth, lower part of gena, palpi, ventral surface of antenna, postero-dorsal corner of pronotum, a pair of longitudinal markings of antero-lateral part of mesoscutum, tegula, subtegular ridge, longitudinal stripe of mesopleuron, posterior and lateral margins of T II to T VII, and membranous part of metasomal sternites whitish yellow. Ovipositor yellowish brown. Wings hyaline. Veins and pterostigma brown to yellowish brown except for yellow wing base. Fore and mid legs whitish yellow to yellowish brown. Hind coxa black baso-dorsally, yellowish brown apico-ventrally. Hind trochanter black dorsally, yellow ventrally. Hind trochantellus whitish yellow. Hind tibia and femur reddish brown except for both apices blackish brown. Hind tibial spurs and hind tarsus yellowish brown.

Male ($n = 1$). Similar to female. Body length 9.6 mm. POL $0.8 \times$ as long as OD. OOL $1.2 \times$ as long as OD. Antenna with 37 flagellomeres. Length of malar space $0.7 \times$ as long as basal width of mandible. Fore wing length 7.8 mm. Hind femur $5.5 \times$ as long as maximum depth in lateral view. T I $3.1 \times$ as long as maximum width. T II $1.25 \times$ as long as maximum width. Flagellum, mesosoma, hind leg, and metasoma darker than female (Fig. 11G).

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Mr. Takumi Amano, who is the collector of holotype.

Remarks. This species resembles *Mesolep. maculata* in the presence of areolet and the body colouration, but can be distinguished by the smooth and polished interspaces between the punctures on the mesopleuron and propodeum (granulate and dull in *Mesolep. maculata*) and the dorsal surface of the propodeum with a conspicuous smooth area in the female (without smooth area in *Mesolep. maculata*).

***Mesoleptidea japonica* sp. nov.**

(SJN: Nippon-hoso-maru-himebachi)

(Figs. 12A–G, 38G, 40G)

Type series. **Holotype:** JAPAN, KPM-NK 81351, F, Nagano Pref., Ueda City, Sugadaira-kogen, 4–25. VI. 2015, S. Shimizu leg. (MsT). **Paratypes:** JAPAN, KPM-NK 84862–84870, 7 F & 2 M, Hokkaido, Hidaka Town, Uenzaru-gawa, 1–28. VIII. 2007, A. Ueda leg. (MsT); KPM-NK 84871–84885, 5 F & 10 M, Hokkaido, Horokanai Town, Uryu, 11–17. VII. 2012, K. Watanabe *et al.* leg. (MsT); OMNH, 1 F & 1 M, ditto; TMNH, 1 F & 1 M, ditto; KPM-NK 84886, M, ditto, 16. VII. 2012, M. Ito leg.; KPM-NK 84887, M, ditto, 17. VII. 2012, K. Watanabe leg.; KPM-NK 84888, M, same data of holotype; KPM-NK 84889, F, Nagano Pref., Fujimi Town, Sakai-Hirohara, 23. VII. 2019, T. Amano leg.; KPM-NK 84890, M, Nagano Pref., Kawakami Vil., Azusayama, 14. VI. 2015, K. Watanabe leg.; KPM-NK 84891, 84892, 1 F & 1 M, Toyama Pref., Toyama City, Arimine, Inonedani, 7–14. VII. 2009, M. Watanabe *et al.* leg. (MsT); KPM-NK 84893, F, ditto, 14–21. VII. 2009.

Description. Female ($n = 18$). Body length 7.1–10.6 (HT: 10.0) mm, covered with silver setae.

Head $0.6 \times$ as long as wide in dorsal view, matt and finely punctate. Clypeus 2.4 – 2.6 (HT: 2.5) \times as broad as high, densely punctate dorsally, sparsely punctate ventrally, lower margin with a shallow median concavity (Fig. 40G). Face 1.7 – 1.8 (HT: 1.8) \times as broad as high, densely punctate, flat. Dorsal profile of gena as Fig. 38G. Occipital carina complete. Length of malar space 0.9 – 0.95 (HT: 0.9) \times as long as basal width of mandible. POL 0.7 – 0.8 (HT: 0.75) \times as long as OD. OOL 1.2 – 1.4 (HT: 1.3) \times as long as OD. Antenna with 35–40 (HT: 39) flagellomeres. FL I 5.7 – 6.65 (HT: 6.65) \times as long as maximum depth, 1.55 – 1.8 (HT: 1.8) \times as long as FL II.

Mesosoma polished, finely and densely punctate. Epomia short or absent (HT: short). Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with smooth area. Mesopleuron with oblique rugae in front of speculum. Interspace of punctures of mesopleuron and propodeum subpolished (Fig. 12E). Metapleuron without distinct punctures (Fig. 12D). Propodeum matt, without carinae except for pleural carina, area superomedia and area petiolaris defined by rugulose surface, without longitudinal smooth area dorsally (Fig. 12E). Fore wing length 6.5 – 8.9 (HT: 8.9) mm. Areolet absent. Fore wing vein 1cu-a postfurcal or interstitial (HT: postfurcal) to vein M&RS. Nervellus subvertical, intercepted posterior the middle. Tarsal claws simple. Hind femur 5.95 – 6.2 (HT: 6.0) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.0 – 4.2 (HT: 4.2): 2.0 : 1.5 – 1.6

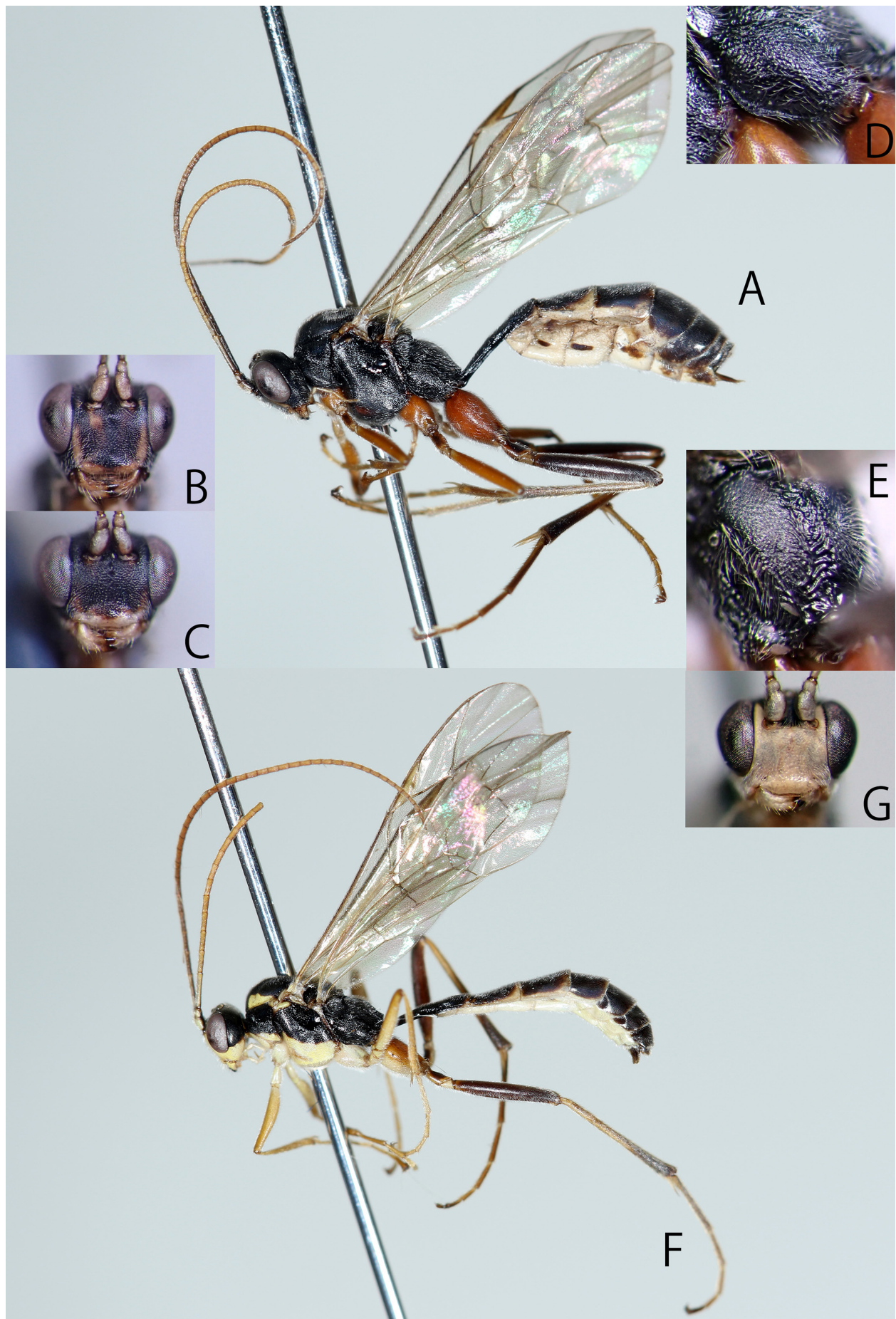


Fig. 12. *Mesoleptidea japonica* sp. nov. (A, B, D, E: KPM-NK 84857, holotype, female; C: KPM-NK 84862, paratype, female; G, F: KPM-NK 84858, paratype, male) — A, F: lateral habitus; B, C, G: head, frontal view; D: metapleuron; E: propodeum, dorso-lateral view.

(HT: 1.5): 0.9–0.95 (HT: 0.9): 1.0–1.05 (HT: 1.05).

Metasoma matt. T I 2.9–3.3 (HT: 2.9) \times as long as maximum width. T II 1.05–1.4 (HT: 1.4) \times as long as maximum width. Ovipositor sheath 0.18–0.25 (HT: 0.2) \times as long as hind tibia.

Colouration (Figs. 12A–E). Body (excluding wings and legs) black. A pair of markings of frontal orbit and facial orbit, a pair of longitudinal stripes below antennal sockets on face (partly obscured), lower part of clypeus, mandible except for basal part and teeth, ventral surface of antennal, and postero-dorsal corner of pronotum yellowish brown. Palpi and tegula yellow to whitish yellow. Posterior margins of metasomal tergites narrowly tinged with whitish yellow (this area of T II and T III wider than other tergites). Lateral sides of T II to T VII more or less tinged with whitish yellow (sometimes T V to T VII entirely black). Yellowish brown area of face sometimes reduced (Fig. 12C). Ventral surface of scape sometimes yellow. Wings hyaline. Veins and pterostigma yellowish brown except for yellow wing base. Fore and mid legs and hind coxa reddish brown. Hind trochantellus, subbasal part of hind tibia, and tibial spurs whitish yellow. Hind trochanter, femur, tibia except for subbasal whitish yellow area, and hind tarsus blackish brown to black.

Male ($n = 19$). Similar to female. T I 3.0–3.4 \times as long as maximum width. T II 1.3–1.5 \times as long as maximum width. Antenna with 35–41 flagellomeres. Ratio of length of hind first to fifth tarsomeres 3.8–3.9: 2.0: 1.5: 0.9–0.95: 0.9. A pair of markings of frontal orbit, face, clypeus, malar space, lower part of gena, mandible except for teeth, ventral surface of scape, lower part of pronotum, a pair of triangle markings of antero-lateral part of mesoscutum, a spot of scutellum (sometimes indistinct), subtegular ridge, ventral part of mesopleuron, and mesosternum yellow (Figs. 12F, G). Fore and mid legs paler than female (Fig. 12F).

Distribution. Japan (Hokkaido and Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Japan.

Remarks. This species resembles *Mesolep. cingulata* (Gravenhorst, 1829) in the absence of the areolet, the red hind coxa, and the partly white-margined metasomal tergites. However, this species can be distinguished by the predominantly black female face (predominantly yellow in *Mesolep. cingulata*), the entirely black female mesosoma (with yellow markings on collar and mesoscutum in *Mesolep. cingulata*), the entirely black mesoscutum (sometimes red in *Mesolep. cingulata*), and the darkened and usually blackish brown hind femur.

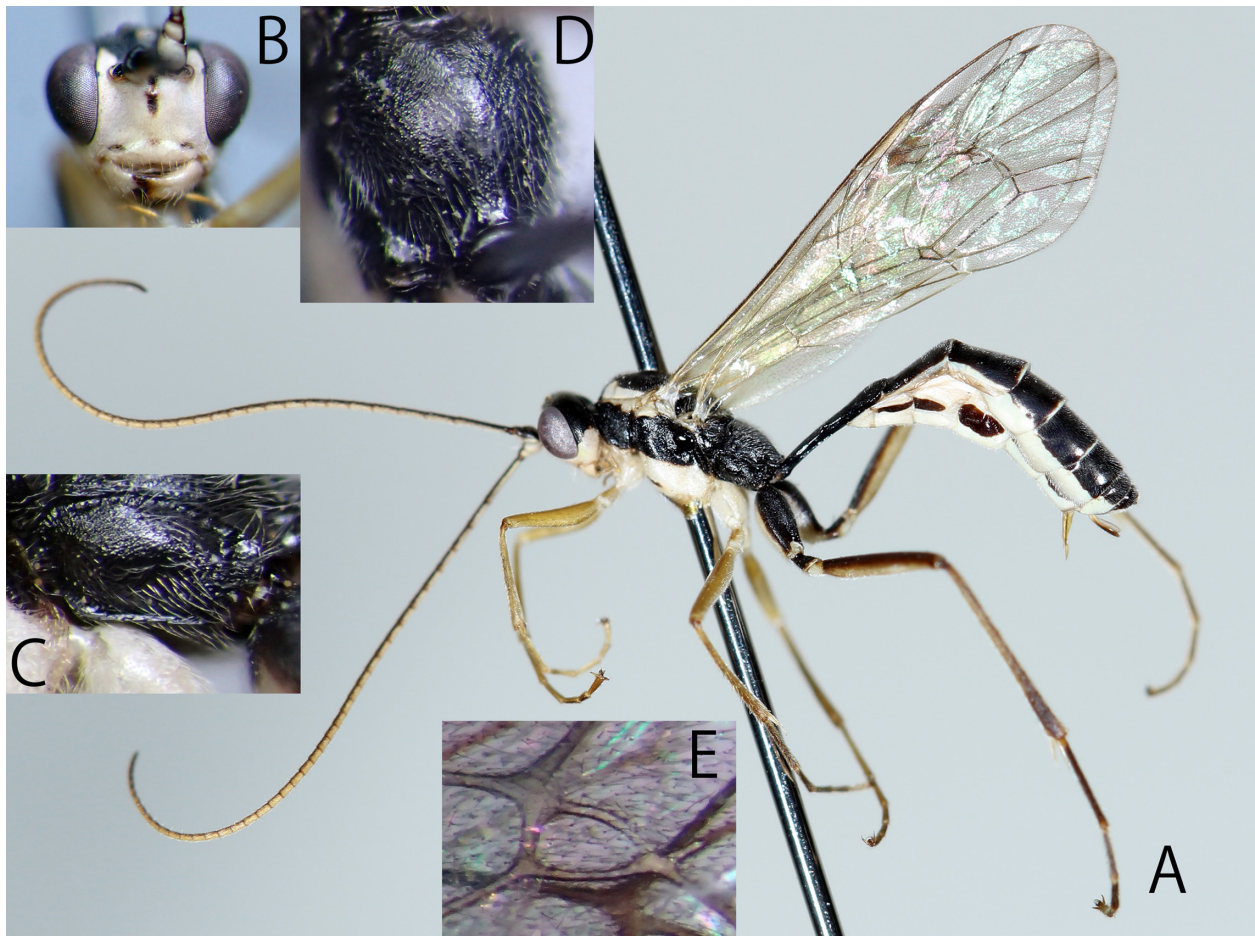


Fig. 13. *Mesoleptidea maculata* Sheng, Sun & Li, 2020 (KPM-NK 84829, female) — A: lateral habitus; B: head, frontal view; C: metapleuron; D: propodeum, dorso-lateral view; E: areolet.

Mesoleptidea maculata Sheng, Sun & Li, 2020
(New SJN: Shirosuji-hoso-maru-himebachi)
(Figs. 13A–E, 40H)

Mesoleptidea maculata Sheng, Sun & Li, 2020: 129.

Description. See Sheng *et al.* (2020).

Materials examined. JAPAN: KPM-NK 84829, F, Fukui Pref., Ikeda Town, Mizuumi, Mt. Heko-san, 18. VI. 2016, S. Shimizu leg.; KPM-NK 84830, M, ditto, 10. VI. 2016.

Distribution. Japan (Honshu) and China.

Bionomics. Unknown.

Remarks. This is the first record of this species from Japan.

Mesoleptidea mesorufa sp. nov.

(SJN: Muneaka-hoso-maru-himebachi)
(Figs. 14A–E, 38H, 40I)

Type series. Holotype: JAPAN, KPM-NK 84859, F, Hokkaido, Obihiro City, 15. VIII. 2019, T. Amano leg.

Description. Female ($n = 1$). Body length 8.8 mm, matt and covered with silver setae.

Head $0.65 \times$ as long as wide in dorsal view. Clypeus

$2.7 \times$ as broad as high, sparsely punctate ventrally, lower margin rounded (Fig. 40I). Face $1.7 \times$ as broad as high, finely punctate and flat. Dorsal profile of gena as Fig. 38H. Occipital carina complete. Length of malar space $0.7 \times$ as long as basal width of mandible. POL $0.9 \times$ as long as OD. OOL $1.2 \times$ as long as OD. Antenna with 38 flagellomeres. FL I $6.65 \times$ as long as maximum depth, $2.0 \times$ as long as FL II.

Mesosoma. Epomia absent. Mesoscutum with weak notaulus. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with large smooth area. Mesopleuron with oblique or transverse rugae in front of speculum. Interspace of punctures of mesopleuron and propodeum granulate or dull (Fig. 14D). Metapleuron with distinct punctures (Fig. 14C). Propodeum coriaceous, without longitudinal smooth area dorsally (Fig. 14D), without carinae except for lateral longitudinal carina and pleural carina. Fore wing length 7.6 mm. Areolet present, shortly petiolated anteriorly, received vein 2m-cu near the outer angle (Fig. 14E). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical, intercepted posterior the middle. Tarsal claws simple. Hind femur $6.0 \times$ as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 3.8: 2.0: 1.5: 0.9: 0.9.

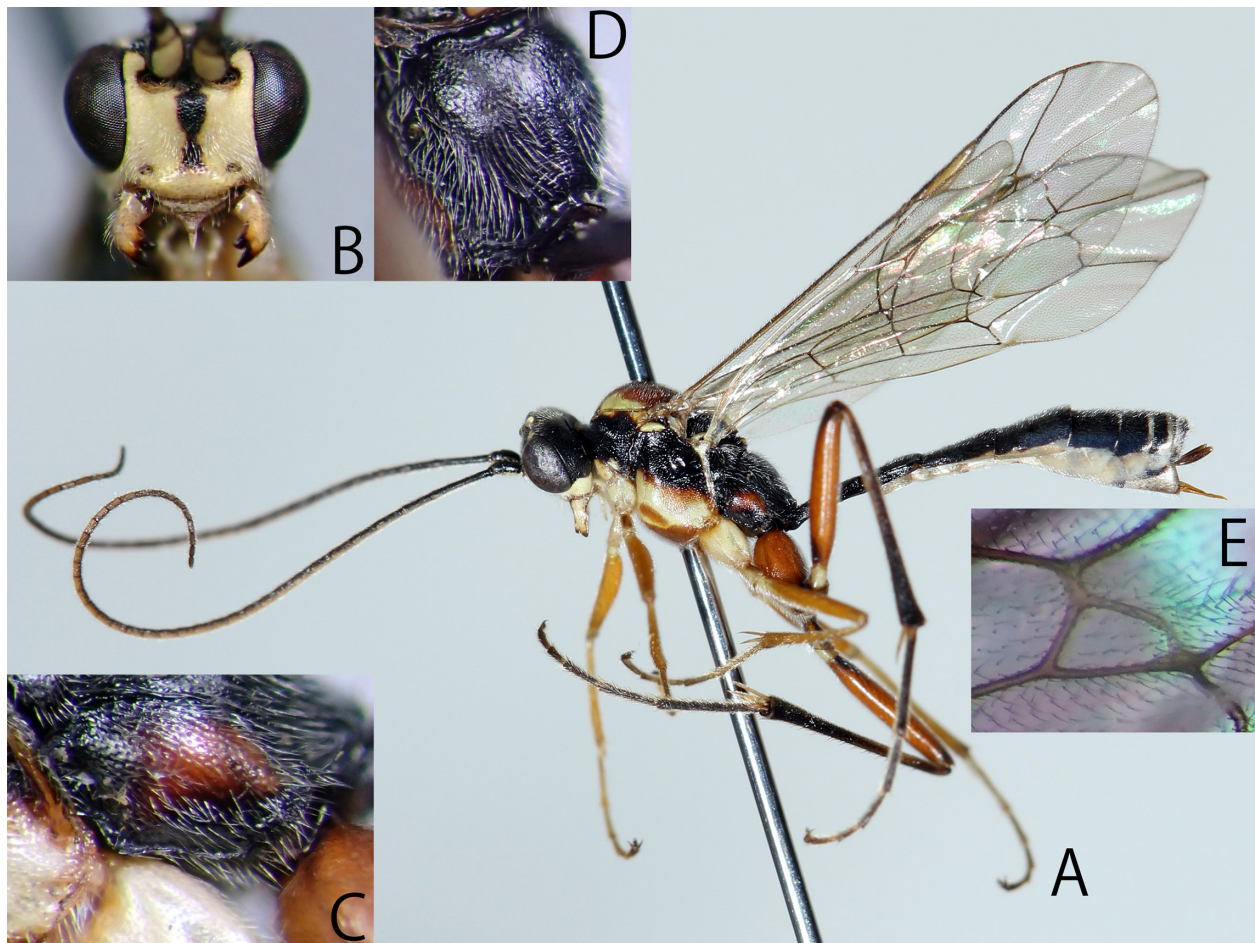


Fig. 14. *Mesoleptidea mesorufa* sp. nov. (KPM-NK 84859, holotype, female) — A: lateral habitus; B: head, frontal view; C: metapleuron; D: propodeum, dorso-lateral view; E: areolet.

Metasoma finely punctate. T I $2.9 \times$ as long as maximum width. T II $1.2 \times$ as long as maximum width. Ovipositor sheath $0.2 \times$ as long as hind tibia.

Colouration (Figs. 14A–E). Body (excluding wings and legs) black. Two pairs of markings of frontal orbit, face except for a median longitudinal black stripe, clypeus, malar space, mandible except for teeth, lower part of gena, palpi, ventral surface of antenna, ventral part of propleuron, small spots of collar, postero-dorsal corner of pronotum, a pair of longitudinal markings of antero-lateral part of mesoscutum, scutellum, postscutellum, tegula, subtegular ridge, and longitudinal stripe of mesopleuron yellow to yellowish brown. Mesoscutum except for yellow markings, mesopleuron along yellow stripe, mesosternum, and a small area of metapleuron reddish brown. Posterior margins of T IV to T VII, lateral margins of T II to T VII, and membranous part of metasomal sternites whitish yellow to white. Ovipositor yellowish brown. Wings hyaline. Veins and pterostigma brown to yellowish brown except for yellow wing base. Fore and mid legs whitish yellow to yellowish brown (coxae, trochanters, and trochantelli paler than other parts). Hind coxa and femur reddish brown each with dorsal blackish brown stripe. Hind trochanter and hind tibia except for base blackish brown. Hind tibia whitish yellow at base. Hind trochantellus and tibial spurs whitish yellow. Hind tarsus blackish brown, each segment with a narrow whitish yellow base.

Male. Unknown.

Distribution. Japan (Hokkaido).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*meso-*” (middle) plus “*rufa*” (red), which derived from the red mesoscutum.

Remarks. This species resembles *Mesolep. maculata* in the presence of the areolet and in the body colouration, but can be distinguished by the entirely rounded clypeus (with a median concavity in *Mesolep. maculata*), the yellow scutellum (black in *Mesolep. maculata*), and the metapleuron with distinct punctures (punctures indistinct in *Mesolep. maculata*).

Tribe **Mesoleiini** Thomson, 1883

Genus *Alcochera* Förster, 1869

Alcochera Förster, 1869: 205. Type species: *Mesoleius nikkoensis* Uchida, 1930. Designated by Townes *et al.* (1965)

Nemesoleius Heinrich, 1949: 87. Type species: *Tryphon flavipes* Gravenhorst, 1829. Original designation.

A single species, *Alcochera nikkoensis* (Uchida, 1930), has been recorded from Japan. In this study, I describe one new species and record one species new to Japan, *Al. flavoclypeata* Sheng & Sun, 2021, below.

Key to Japanese species of *Alcochera*

1. Antenna with a conspicuous white band (Fig. 15A).
..... *Alcochera flavoclypeata* Sheng & Sun, 2021
- Antenna without a white band (Figs. 16A, E).
..... 2
2. Body length less than 10 mm. Posterior transverse carina of propodeum complete. At least T III with a reddish brown area. Legs with reddish brown and yellow areas. Small species, body length shorter than 11 mm.
..... *Alcochera nikkoensis* (Uchida, 1930)
- Body length more than 10 mm. Posterior transverse carina of propodeum absent. Body including legs entirely black (Figs. 16A, E). Large species, body length more than 11 mm.
..... *Alcochera nigra* sp. nov.

Alcochera flavoclypeata Sheng & Sun, 2021
(New SJN: Shiro-obi-maru-himebachi)
(Figs. 15A, B)

Alcochera flavoclypeata Sheng & Sun, 2021 in Sun *et al.* (2021b): 275.

Description. See Sun *et al.* (2021b).

Materials examined. JAPAN: KPM-NK 84860, M, Kanagawa Pref., Fujisawa City, campus of Keio University, 27. IV. 2018, T. Amano leg.; KPM-NK 84861, M, Osaka Pref., Takatsuki City, Niryou, 9–26. V. 2013, S. Fujie leg. (MsT).

Distribution. Japan (Honshu) and China.

Bionomics. Unknown.

Remarks. This is the first record of this species from Japan.

Alcochera nigra sp. nov.
(SJN: Futo-kuro-maru-himebachi)
(Figs. 16A–F, 38I, 40J)

Type series. Holotype: JAPAN, KPM-NK 91248, F, Kanagawa Pref., Atsugi City, Funako, Campus of Tokyo University of Agriculture, 6. V. – 7 VII.

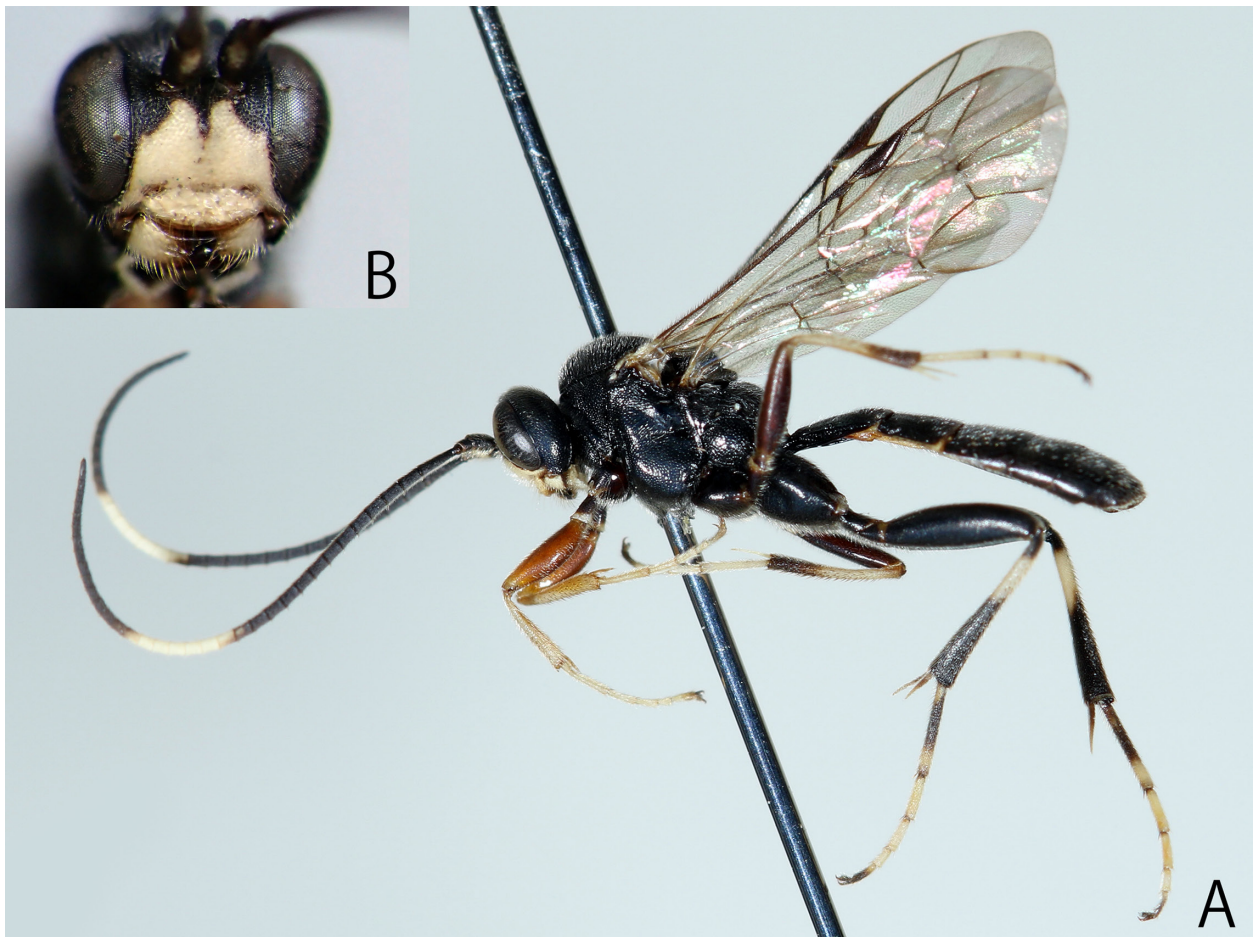


Fig. 15. *Alcochera flavochrysea* Sheng & Sun, 2021 (KPM-NK 84860, male) — A: lateral habitus; B: head, frontal view.

2016, Y. Kato & S. Koizumi leg. (MST). **Paratypes:** JAPAN, KPM-NK 91249–91253, 3 F & 2 M, same data of holotype; KPM-NK 91254, M, Kanagawa Pref., Hayama Town, Nagae, Mt. Futagoyama, 2. VI. 1995, I. Kawashima leg.; KPM-NK 91255, F, ditto, 5. VI. 1997; KPM-NK 91256, F, Kanagawa Pref., Miura City, Mito, Kanda, 8. VI. 1996, I. Kawashima leg.

Description. Female ($n = 6$). Body length 11.4–13.5 (HT: 13.5) mm, polished and covered with punctures and brown setae.

Head 0.55–0.6 (HT: 0.57) \times as long as wide in dorsal view, finely punctate and matt. Clypeus 3.0 \times as broad as high, sparsely punctate, convex in lateral view, lower margin narrowly margined with a median concavity (Fig. 40J). Face 1.7–1.8 (HT: 1.8) \times as broad as high, densely punctate (Fig. 16B), weakly convex medially in lateral view. Dorsal profile of gena as Fig. 38I. Occipital carina complete. Length of malar space 0.4 \times as long as basal width of mandible. Mandible densely punctate, punctures partly united each other. POL 1.2–1.4 (HT: 1.2) \times as long as OD. OOL 1.25–1.5 (HT: 1.25) \times as long as OD. Antenna with 42–45 (HT: 42) flagellomeres. FL I 5.0 \times as long as maximum depth, 1.7–1.8 (HT: 1.7) \times as long as FL II.

Mesosoma densely punctate. Epomia absent. Mesoscutum with weak notaulus, interspace of punctures densely coriaceous and dull. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with large smooth area. Mesopleuron finely striated in front of speculum. Propodeum with lateromedian longitudinal carina and pleural carina (Fig. 16C). Lateral longitudinal carina largely absent anteriorly. Posterior transverse carina partly obscured anteriorly. Area superomedia and area petiolaris largely rugose. Fore wing length 9.0–10.0 (HT: 10.0) mm. Areolet present, shortly petiolated, received vein 2m-cu at the outer angle (Fig. 16D). Fore wing with vein 2rs-m as long as vein 3rs-m. Fore wing vein 1cu-a postfurcal to vein M&RS. Nervellus subvertical, intercepted at the middle. Tarsal claws simple. Hind femur 4.2–4.7 (HT: 4.4) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.2–4.3 (HT: 4.3): 2.0: 1.4–1.55 (HT: 1.5): 0.8–0.9 (HT: 0.8): 0.9–1.0 (HT: 0.9).

Metasoma minutely coriaceous. T I 1.8–1.9 (HT: 1.8) \times as long as maximum width, largely finely punctate. T II 0.9–0.95 (HT: 0.95) \times as long as maximum width, finely punctate. Ovipositor sheath 0.2 \times as long as hind tibia.

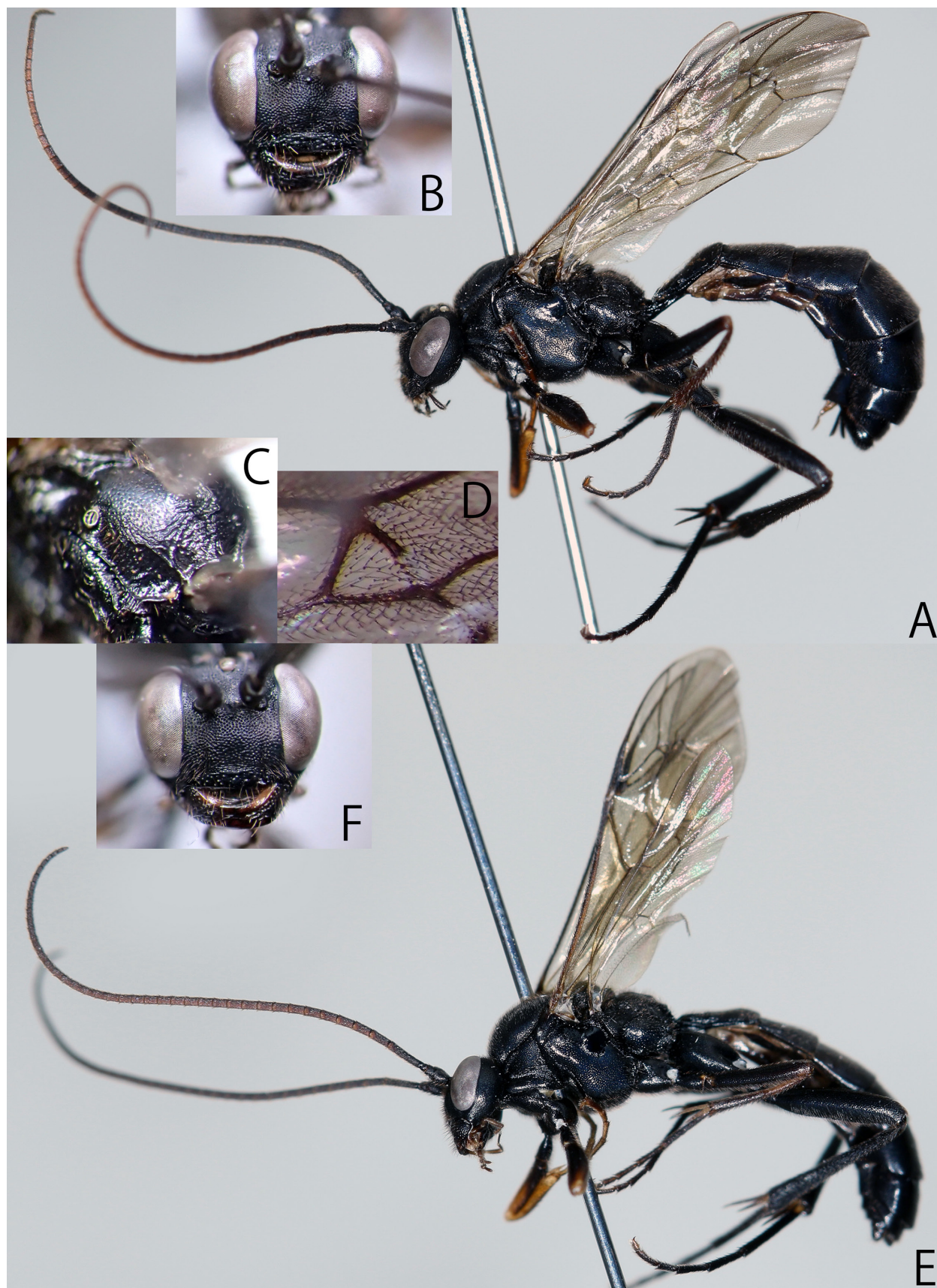


Fig. 16. *Alcochera nigra* sp. nov. (A–D: KPM-NK 91248, holotype, female; E, F: KPM-NK 91252, paratype, male) — A, E: lateral habitus; B, F: head, frontal view; C: propodeum, dorso-lateral view; D: areolet.

Colouration (Figs. 16A–D). Body (excluding wings) black. Mandible partly tinged with yellowish brown to reddish brown. Fore tibia, fore and mid tibial spurs and tarsi yellowish brown. Ovipositor yellowish brown. Wings hyaline. Veins and pterostigma blackish brown except for dark brown wing base.

Male ($n = 3$). Similar to female. Clypeus $2.9\text{--}3.0 \times$ as broad as high. Face $1.65 \times$ as broad as high. POL $1.1\text{--}1.25 \times$ as long as OD. OOL $1.2\text{--}1.25 \times$ as long as OD. Antenna with 41–42 flagellomeres. FL I $4.4 \times$ as long as maximum depth. Ratio of length of hind first to fifth tarsomeres $4.5\text{--}4.6$: 2.0 : 1.6 : $0.85\text{--}0.9$: 1.0 .

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*nigra*” (black). This species has black body and legs.

Remarks. This species can be easily distinguished from other species by its almost entirely black body, including legs and antenna.

Genus *Barytarbes* Förster, 1869

Barytarbes Förster, 1869: 212. Type species: *Tryphon colon* Gravenhorst, 1829. Designated by Viereck (1914).

Hybristes Förster, 1869: 210. Type species: *Tryphon adpropinquator* Gravenhorst, 1829. Designated by Townes *et al.* (1965).

Isodiaeta Förster, 1869: 204. Type species: *Mesoleius flavicornis* Thomson, 1892. Designated by Horstmann (2005).

Polytrera Förster, 1869: 202. Type species: *Mesoleius (Barytarbus) laeviusculus* Thomson, 1883. Designated by Viereck (1914).

Barytarbus Thomson, 1883: 931. Emendation.

Polytreres Thomson, 1892: 1873. Emendation.

Apholium Townes, 1970: 113. Type species: *Apholium leptobasis* Townes, 1970. Original designation.

A single species, *B. leptobasis* (Townes, 1970), has been recorded from Japan. In this study, I record this species for the first time from Sado Island.

Barytarbes leptobasis (Townes, 1970)
(SJN: Nagano-maru-himebachi)
(Figs. 17A, B)

Apholium leptobasis Townes, 1970: 114.

Description. See Townes (1970).

Materials examined. JAPAN: AEI, F (holotype), M, Nagano Pref., Kamikochi, 23. VII. 1954, Townes family

leg.; KPM-NK 84786, 84817, 2 F, Sado Is., Niigata Pref., Hakuundai to Mt. Myokenzan, 10. IX. 2010, K. Watanabe leg.

Distribution. Japan (Honshu and Sado Island).

Genus *Campodorus* Förster, 1869

Campodorus Förster, 1869: 213. Type species: *Mesoleius melanogaster* Holmgren, 1857. Designated by Perkins (1962).

Phagesorus Förster, 1869: 212. Type species: *Tryphon caligatus* Gravenhorst, 1829. Designated by Townes *et al.* (1965).

Cuboscopesis Heinrich, 1952: 1080. Type species: *Cuboscopesis epachthoides* Heinrich, 1952. Original designation.

Two species, *Ca. circumspectus* (Holmgren, 1876) and *Ca. kunashiricus* Kasparyan, 2003, have been recorded from Japan, but I have found more than ten indeterminate species from Japan. The taxonomic treatment of these species except for three species requires the additional specimens and comparison with European species. In this study, I describe three new species from Japan below.

Preliminary key to Japanese species of *Campodorus* (modified from the key in Kasparyan (2003, 2005, 2006))

1. Tarsal claws pectinate. [Hind coxa red. Metasomal tergites without red area(s). Mesopleuron polished and punctate. Clypeus and mandible whitish yellow. Face yellow. Pterostigma uniformly brown. Hind femur darkened at apex.]

..... *Campodorus kunashiricus* Kasparyan, 2003
-. Tarsal claws simple.

..... 2
2. Mesoscutum, mesopleuron, and metapleuron red to reddish brown (Figs. 20A, D). Length of malar space $0.1 \times$ as long as basal width of mandible.

..... *Campodorus rufidorsalis* **sp. nov.**
-. Mesoscutum, mesopleuron, and metapleuron black (Figs. 18A, 19A). Length of malar space more than $0.3 \times$ as long as basal width of mandible.

..... 3
3. Face yellow except for a median longitudinal black stripe (Fig. 18B).

..... *Campodorus albimarginalis* **sp. nov.**
-. Face entirely black (Fig. 19B).

..... 4

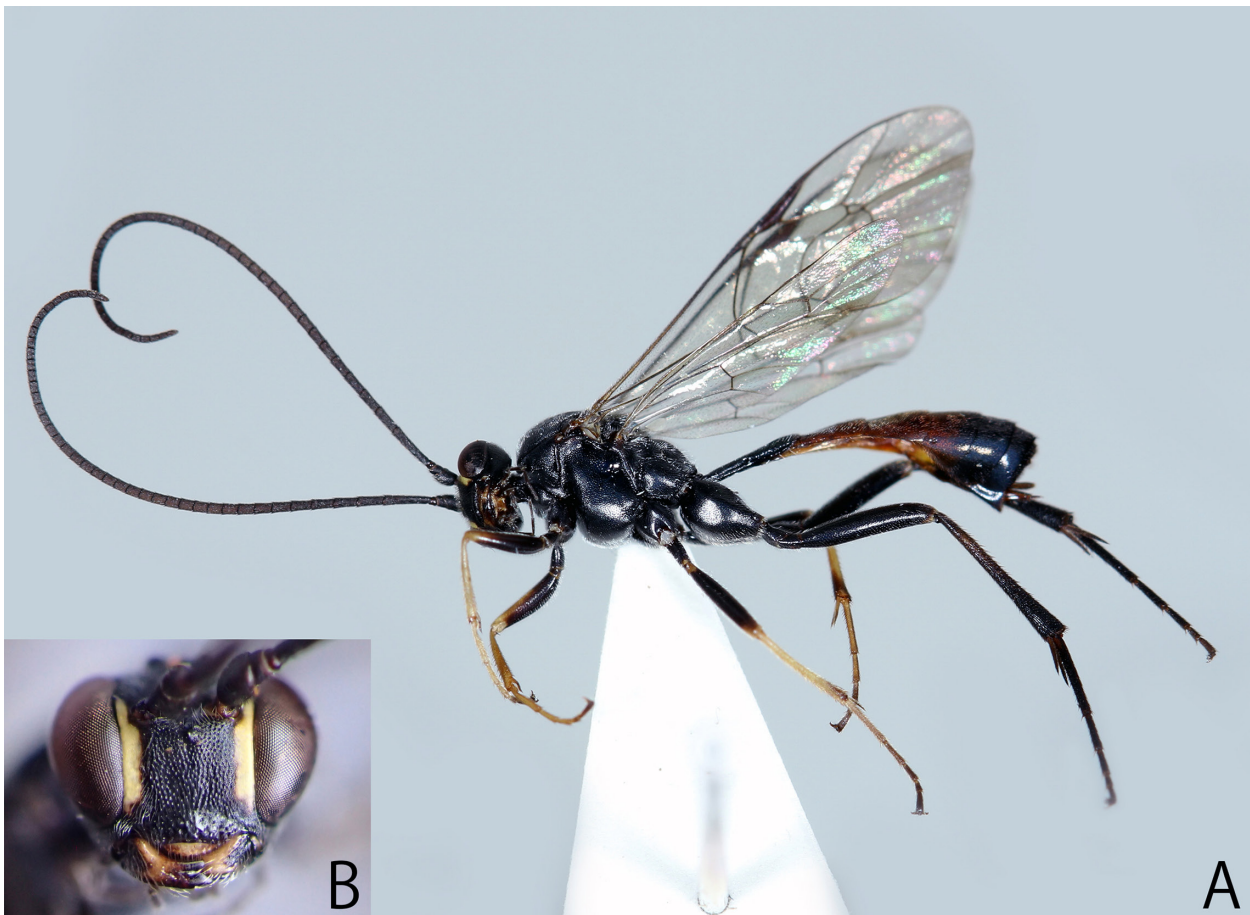


Fig. 17. *Barytarbes leptobasis* (Townes, 1970) (KPM-NK 84786, female) — A: lateral habitus; B: head, frontal view.

4. Hind tibia entirely reddish yellow or apical part darkened. T I $1.7\text{--}1.8 \times$ as long as maximum width. Hind coxa and trochanter black. [Clypeus and mandible reddish yellow. Ovipositor sheath with short and moderately long setae at apex. Pterostigma pale reddish brown. Metasomal sternites and laterotergites at least mostly darkened. Fore wing vein 1cu-a interstitial to vein M&RS. Hind femur $5.5 \times$ as long as maximum depth in lateral view.]

..... *Ca. circumspectus* (Holmgren, 1876)
 -. Hind tibia white basally and black apically (Fig. 19A).
 T I $1.4\text{--}1.5 \times$ as long as maximum width. Hind coxa
 and trochanter reddish yellow to yellow (Fig. 19A).

..... *Campodorus japonicus* **sp. nov.**

***Campodorus albimarginalis* sp. nov.**

(SJN: Shiroheri-ko-maru-himebachi)

(Figs. 18A–D, 38J, 40K)

Type series. Holotype: JAPAN, KPM-NK 84956, F, Nara Pref., Nara City, Nakamachi, campus of Kindai University, 11. V. 2012, M. Ito leg. **Paratype:** JAPAN, KPM-NK 84957, F, Kanagawa Pref., Atsugi City, Sanda, 26. IV. 2008, H. Katahira leg.

Description. Female ($n = 2$). Body length 6.8–7.4 (HT: 6.8) mm, covered with silver setae.

Head $0.6 \times$ as long as wide in dorsal view, matt. Clypeus $2.7\text{--}2.8$ (HT: 2.7) \times as broad as high, sparsely punctate and polished, convex in lateral view, lower margin with a median concavity (Fig. 40K). Face $1.8 \times$ as broad as high, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 38J. Occipital carina complete. Length of malar space $0.45\text{--}0.5$ (HT: 0.5) \times as long as basal width of mandible. Base of mandible slightly convex. POL $1.6 \times$ as long as OD. OOL $1.4\text{--}1.6$ (HT: 1.6) \times as long as OD. Antenna with 33–34 (HT: 33) flagellomeres. FL I $5.0 \times$ as long as maximum depth, $1.6\text{--}1.65$ (HT: 1.65) \times as long as FL II. Length of FL I plus FL II $1.35 \times$ as long as eye height.

Mesosoma polished and punctate. Epomia absent. Pronotum rugulose along collar. Mesoscutum with weak notaulus, interspace of punctures slightly coriaceous. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with large smooth area (Fig. 18C). Propodeum with all carinae except for anterior transverse carina (Fig. 18D). Fore wing length 6.5–7.2 (HT: 6.5) mm. Areolet absent. Fore wing vein 1cu-a postfurcal to vein M&RS (Fig. 18A). Nervellus slightly inclivous, intercepted

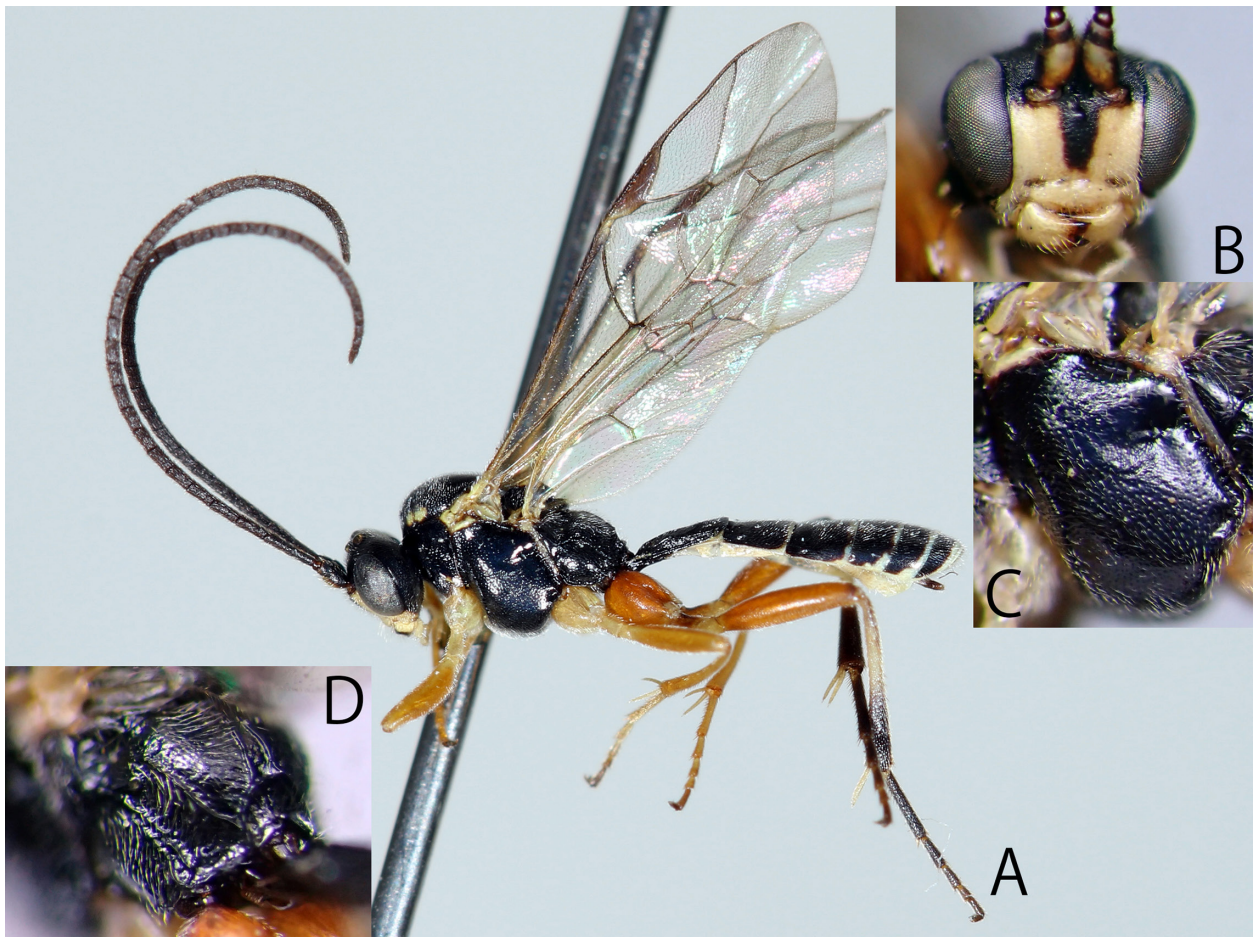


Fig. 18. *Campodorus albimarginalis* sp. nov. (KPM-NK 84956, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron; D: propodeum, dorso-lateral view.

posterior the middle. Tarsal claws simple. Hind femur $4.6 \times$ as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.8: 2.0: 1.3: 0.9: 1.05–1.1 (HT: 1.05).

Metasoma matt. T I 1.5–1.6 (HT: 1.6) \times as long as maximum width, with latero-median longitudinal carina, its posterior end situated 0.5–0.55 (HT: 0.5) of segment. T II 0.7–0.75 (HT: 0.75) \times as long as maximum width. Setae of subgenital plate directed backwards. Ovipositor sheath with short (shorter than half depth of ovipositor sheath) setae apically and rather long (longer than half depth of ovipositor sheath) setae dorso-apically. Ovipositor sheath $0.2 \times$ as long as hind tibia.

Colouration (Figs. 18A–D). Body (excluding wings and legs) black. Face except for a median longitudinal stripe, clypeus, malar space, mandible except for teeth, palpi, ventral spot of scape, postero-dorsal and postero-ventral corners of pronotum, a pair of markings of antero-lateral part of mesoscutum, scutellum except for median brown area, tegula, and subtegular ridge yellow to whitish yellow. Posterior margins of T II to T VII, lateral sides of T III to T VII, and metasomal sternites except for sclerites

white. Postscutellum sometimes tinged with yellow. Wings hyaline. Veins and pterostigma blackish brown except for yellow wing base. Fore and mid legs reddish brown to yellowish brown. Hind coxa, trochanter, and femur reddish brown. Hind trochantellus, subbasal band of hind tibia, and hind tibial spurs yellowish brown. Hind tibia except for subbasal band and hind tarsus blackish brown.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*albi-*” (whitish) plus “*marginalis*” (margin). This species has white margins of metasomal tergites.

Remarks. This species resembles *Ca. crassipes* (Thomson, 1894) in the punctate mesopleuron and the body colouration but can be distinguished by the black base of the hind tibia (at least partially white in *Ca. crassipes*), the T I 1.5–1.6 \times as long as the maximum width (1.25 \times in *Ca. crassipes*), and the face with a median longitudinal black stripe (entirely yellow in *Ca. crassipes*).

Campodorus japonicus sp. nov.

(SJN: Madara-ko-maru-himebachi)

(Figs. 19A–D, 38K, 40L)

Type series. Holotype: JAPAN, KPM-NK 84961, F, Yamanashi Pref., Koushu City, Mt. Daibosatsu, Kaminikkawa-toge, 16. VI. 2007, T. Ban leg.

Paratypes: JAPAN, KPM-NK 84962, F, Gunma Pref., Mikuni-toge, 9. VI. 2008, K. Oohashi leg.; KPM-NK 84963, F, Kanagawa Pref., Hiratsuka City, Mt. Komayama to Shonandaira, 21. IV. 2007, K. Watanabe leg.; KPM-NK 84964, F, Kanagawa Pref., Fujisawa City, Shinbayashi-koen, 20. IV. 2008, T. Ishizaki leg.

Description. Female ($n = 4$). Body length 6.1–6.8 (HT: 6.8) mm, covered with silver setae.

Head 0.5–0.6 (HT: 0.57) \times as long as wide in dorsal view, matt. Clypeus 2.7–2.8 (HT: 2.7) \times as broad as high, sparsely punctate and polished, convex in lateral view, lower margin with a median concavity (Fig. 40L). Face 2.0 \times as broad as high, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 38K. Occipital carina complete. Length of malar space 0.4–0.5 (HT: 0.5) \times as long as basal width of mandible. Base of mandible flat.

POL 0.95–1.2 (HT: 0.95) \times as long as OD. OOL 1.4–1.6 (HT: 1.6) \times as long as OD. Antenna with 34–37 (HT: 37) flagellomeres. FL I 5.0 \times as long as maximum depth, 1.55–1.65 (HT: 1.55) \times as long as FL II. Length of FL I plus FL II 1.3 \times as long as eye height.

Mesosoma polished and punctate. Epomia absent. Pronotum rugulose along collar. Mesoscutum with weak notaulus, interspace of punctures slightly coriaceous. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with large smooth area (Fig. 19C). Propodeum with all carinae except for anterior transverse carina. Lateromedian longitudinal carina largely indistinct (Fig. 19D). Median part of posterior transverse carina absent. Anterior part of lateral longitudinal carina absent. Fore wing length 5.8–7.3 (HT: 7.3) mm. Areolet absent. Fore wing vein 1cu-a postfurcal to vein M&RS (Fig. 19A). Nervellus slightly inclivous, intercepted posterior the middle. Tarsal claws simple. Hind femur 4.75–4.9 (HT: 4.75) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.1–4.2 (HT: 4.2): 2.0: 1.5: 0.9–1.0 (HT: 1.0): 1.0–1.1 (HT: 1.0).

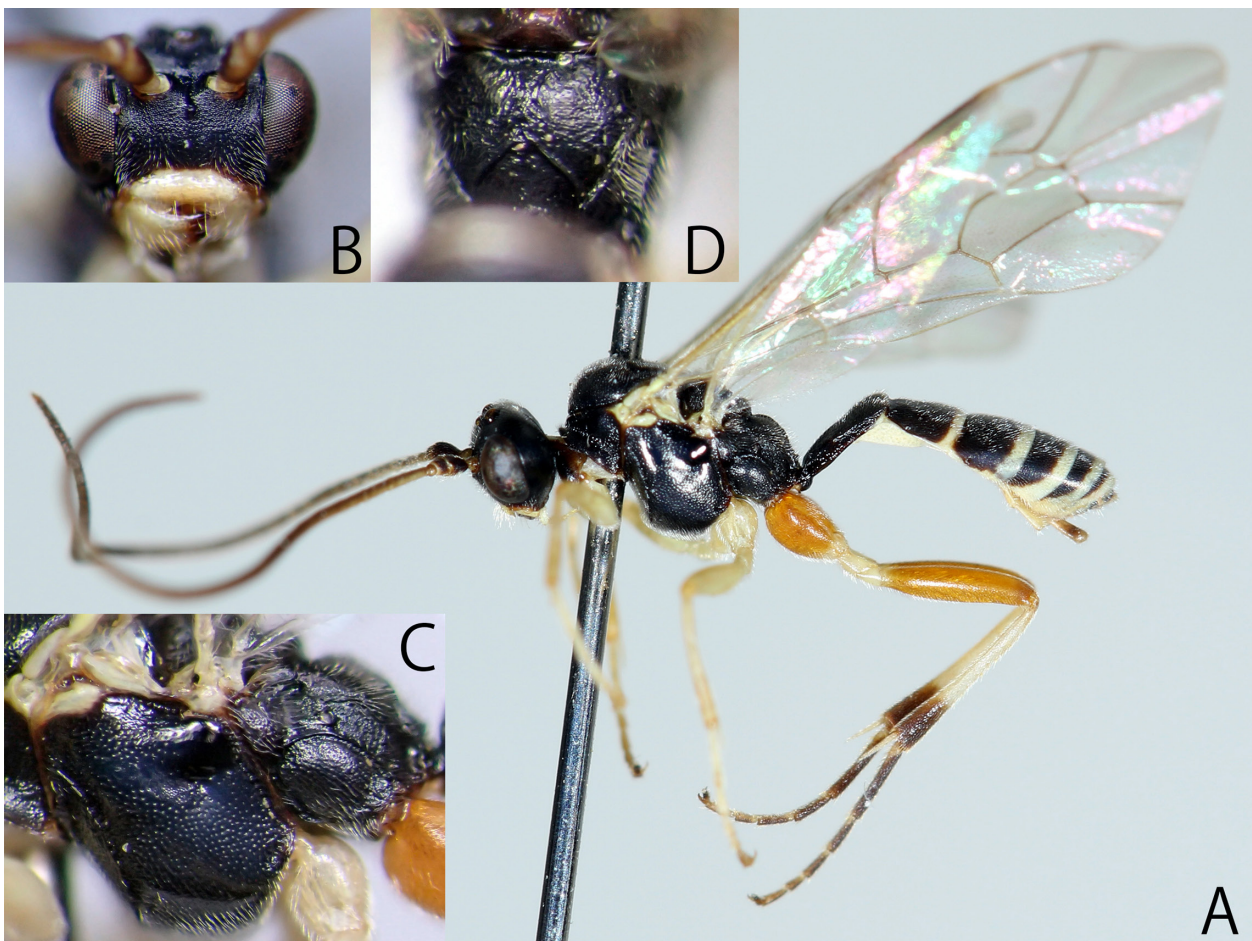


Fig. 19. *Campodorus japonicus* sp. nov. (KPM-NK 84961, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron and metapleuron; D: propodeum, dorsal view.

Metasoma matt. T I 1.4–1.5 (HT: 1.5) \times as long as maximum width, with latero-median longitudinal carina (sometimes weak), its posterior end situated near spiracle. T II 0.75–0.8 (HT: 0.75) \times as long as maximum width. Setae of subgenital plate directed backwards. Ovipositor sheath with short setae (shorter than half depth of ovipositor sheath) apically. Ovipositor sheath 0.25 \times as long as hind tibia.

Colouration (Figs. 19A–D). Body (excluding wings and legs) black. Clypeus, mandible except for teeth, palpi, ventral spot of scape, postero-dorsal corner of pronotum, scutellum, postscutellum, tegula, and subtegular ridge yellow to whitish yellow. Posterior margins of T II to T VII, lateral sides of T III to T VII, and metasomal sternites except for sclerites white. Wings hyaline. Veins and pterostigma brown except for yellow wing base. Fore and mid legs whitish yellow. Hind coxa and femur reddish yellow. Hind trochanter, trochantellus, tibia except for base and apical part, and hind tibial spurs whitish yellow. Hind tibia except for base and apical part and hind tarsus blackish brown.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Japan.

Remarks. This species resembles *Ca. liosternus* (Thomson, 1894) in body colouration but can be distinguished by the length of FL I plus FL II 1.3 \times as long as the eye height (0.95–1.1 \times in *Ca. liosternus*) and the brown pterostigma (dark in *Ca. liosternus*).

***Campodorus rufidorsalis* sp. nov.**

(SJN: Muneaka-ko-maru-himebachi)

(Figs. 20A–E, 38L, 40M)

Type series. **Holotype:** JAPAN, KPM-NK 84958, F, Osaka Pref., Takatsuki City, Akitagawa-ryokuchi, 30. IV. 2011, S. Fujie leg. **Paratypes:** JAPAN, KPM-NK 84959–84960, 1 F & 1 M, Osaka Pref., Takatsuki City, Hara to Hagitani, 28. IV. 2012, S. Fujie leg.; OMNH, F, ditto.

Description. Female ($n = 3$). Body length 6.25–6.5 (HT: 6.5) mm, covered with silver setae.

Head 0.6 \times as long as wide in dorsal view, matt. Clypeus 2.8 \times as broad as high, sparsely punctate and polished, convex in lateral view, lower margin with a median concavity (Fig. 40M). Face 1.95–2.0 (HT: 2.0) \times as broad as high, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 38L. Occipital carina complete. Length of malar space 0.1 \times as long as basal width of mandible. Base of mandible flat. POL 0.7–0.9 (HT: 0.7) \times as long as OD. OOL 0.9–1.2 (HT: 0.9) \times as long as OD.

Antenna with 35–36 (HT: 36) flagellomeres. FL I 5.7 \times as long as maximum depth, 1.55–1.6 \times as long as FL II. Length of FL I plus FL II 1.0 \times as long as eye height.

Mesosoma polished and punctate. Epomia absent. Pronotum rugulose along collar. Mesoscutum with weak notaulus, interspace of punctures slightly coriaceous. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with large smooth area (Fig. 20A). Propodeum with all carinae except for anterior transverse carina (Fig. 20C). Fore wing length 6.2–7.4 (HT: 6.2) mm. Areolet absent. Fore wing vein 1cu-a postfurcal to vein M&RS (Fig. 20A). Nervellus slightly inclivous, intercepted posterior the middle. Tarsal claws simple. Hind femur 5.0–5.2 (HT: 5.2) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.0–4.1 (HT: 4.1): 2.0: 1.5–1.55 (HT: 1.5): 0.95–1.0 (HT: 1.0): 1.0–1.2 (HT: 1.2).

Metasoma matt. T I 1.5 \times as long as maximum width, with latero-median longitudinal carina, its posterior end situated near midlength of segment. T II 0.65–0.9 (HT: 0.9) \times as long as maximum width. Setae of subgenital plate directed backwards. Ovipositor sheath with short (shorter than half depth of ovipositor sheath) setae apically. Ovipositor sheath 0.25 \times as long as hind tibia.

Colouration (Figs. 20A–C). Body (excluding wings and legs) black. Clypeus, malar space, mandible except for teeth, palpi, postero-dorsal and postero-ventral corners of pronotum, scutellum, postscutellum, tegula, and subtegular ridge yellow to whitish yellow. Mesoscutum, mesopleuron, and metapleuron red to reddish brown. Posterior margins of T II to T VII, lateral sides including laterotergites of T III to T VII, and metasomal sternites except for sclerites white. Collar partly tinged with yellow and reddish brown. Anterior part of mesoscutum more or less darkened. Wings hyaline. Veins and pterostigma brown to blackish brown except for yellow wing base. Fore and mid legs reddish brown to yellowish brown. Hind coxa, trochanter, and femur reddish brown except for coxa and trochanter partly tinged with yellow. Hind trochantellus, tibia except for base and apical part, and hind tibial spurs whitish yellow. Hind tibia except for base and apical part and hind tarsus blackish brown.

Male ($n = 1$). Similar to female. Body length 7.2 mm. Antenna with 37 flagellomeres. Hind femur 4.75 \times as long as maximum depth in lateral view. T I 1.6 \times as long as maximum width. A pair of longitudinal markings along frontal orbit, face, pronotum, propleuron, a pair of markings of antero-lateral part of mesoscutum, and longitudinal stripe of mesopleuron yellow (Figs. 20D, E). Base of hind tibia paler than female (Fig. 20D).

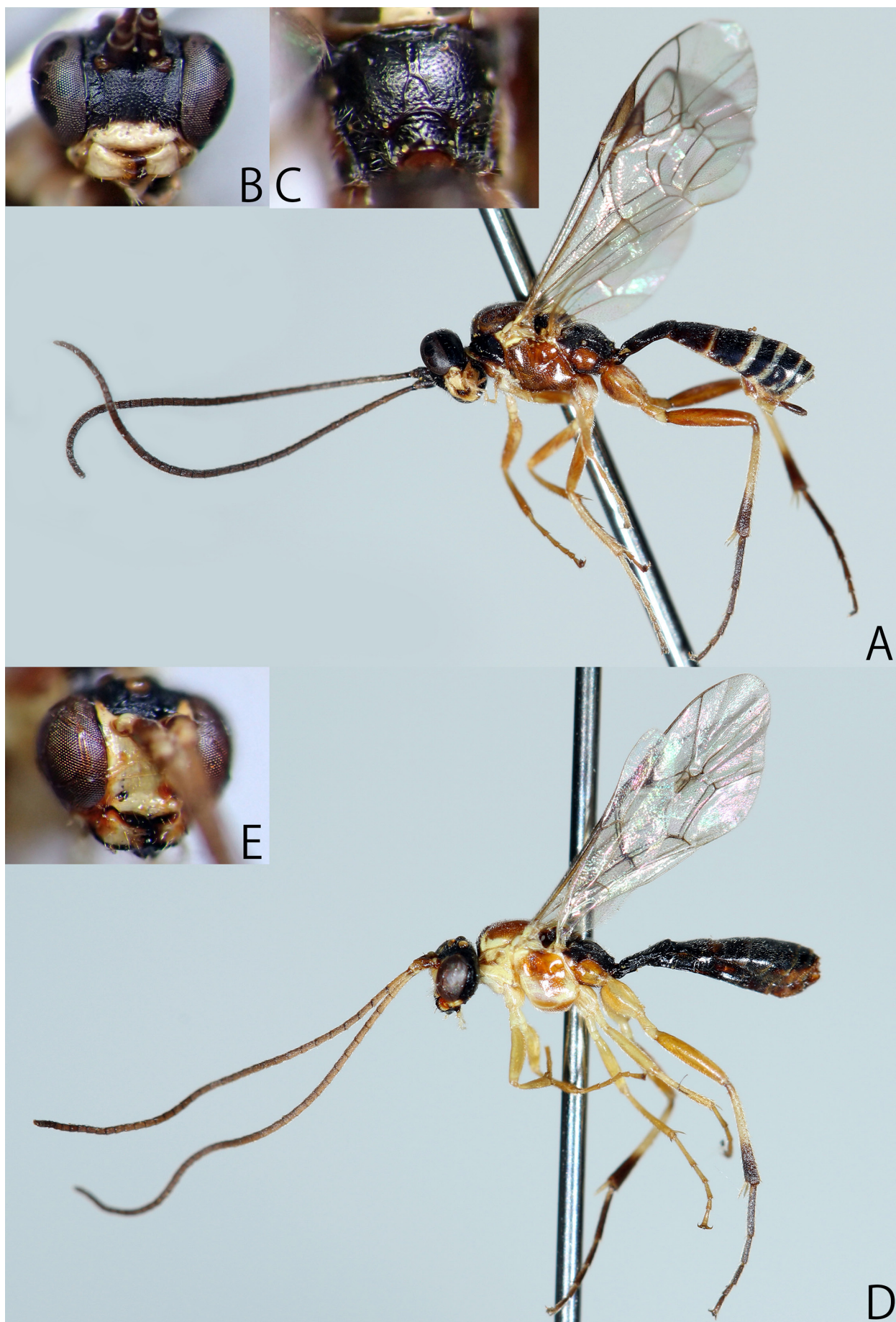


Fig. 20. *Campodorus rufidorsalis* sp. nov. (A–C: KPM-NK 84958, holotype, female; D, E: KPM-NK 84959, paratype, male) — A, D: lateral habitus; B, E: head, frontal view; C: propodeum, dorsal view.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from “*rufi*” (reddish) plus “*dorsalis*” (back). This species has red mesoscutum.

Remarks. This species resembles *Ca. formosus* (Gravenhorst, 1829) in the body colouration and the short malar space but can be distinguished by the T I $1.5 \times$ as long as maximum width ($1.6\text{--}1.7 \times$ in *Ca. formosus*), the red mesopleuron (black in female of *Ca. formosus*), and the black base of hind tibia (reddish in *Ca. formosus*).

Genus *Hyperbatus* Förster, 1869

Hyperbatus Förster, 1869: 210. Type species: *Mesoleius segmentator* Holmgren, 1857. Designated by Townes *et al.* (1965).

A single species, *H. segmentator* (Gravenhorst, 1829), has been recorded from Kunashiri Island, Japan. In this study, I describe three new species from Japan below.

Key to Japanese species of *Hyperbatus* (female only)

1. Ovipositor sheath pale yellow (Fig. 23E). Length of malar space $0.4 \times$ as long as basal width of mandible. T I $2.3 \times$ as long as maximum width. Face yellow with a median black oval marking (Fig. 23B). Hind coxa largely tinged with reddish brown (Fig. 23A).

..... *Hyperbatus montanus* **sp. nov.**
-. Ovipositor sheath blackish brown to black (Figs. 21E, 22E, 24E). Other character states various.

..... 2
2. Antenna with 28 flagellomeres. Length of malar space shorter than $0.35 \times$ as long as basal width of mandible. T I $1.5 \times$ as long as maximum width. Lower half of mesopleuron with reddish area. Face with yellow area. Hind coxa red to reddish brown.

..... *Hyperbatus segmentator* (Gravenhorst, 1829)
-. Antenna with more than 30 flagellomeres. Length of malar space longer than $0.35 \times$ as long as basal width of mandible. Other character states various.

..... 3
3. Face with yellow areas (Fig. 22B). Hind femur reddish brown (Fig. 22A). Antenna with 39 flagellomeres. T I $1.9 \times$ as long as maximum width. Hind coxa black (Fig. 22A).

..... *Hyperbatus borealis* **sp. nov.**
-. Face and hind femur black to blackish brown (Figs. 21A, B, 24A, B). Other character states various.

..... 4

4. Hind coxa black (Fig. 21A). Antenna with 37–38 flagellomeres. T I $1.5\text{--}1.6 \times$ as long as maximum width. Hind tarsus slender (Fig. 41G).

..... *Hyperbatus ariminensis* **sp. nov.**
-. Hind coxa red (Fig. 24A). Antenna with 31 flagellomeres. T I $2.3 \times$ as long as maximum width. Hind tarsus robust (Fig. 41H).

..... *Hyperbatus nigrifemur* **sp. nov.**

Hyperbatus ariminensis **sp. nov.**

(SJN: Arimine-ko-maru-himebachi)

(Figs. 21A–E, 39A, 40N, 41G)

Type series. **Holotype:** JAPAN, KPM-NK 84935, F, Toyama Pref., Toyama City, Arimine, Inonedani, 1–8. IX. 2009, M. Watanabe *et al.* leg. (MsT). **Paratype:** JAPAN, KPM-NK 81369, F, same data of holotype.

Description. Female ($n = 2$). Body length 7.6–8.0 (HT: 8.0) mm, matt and covered with silver setae.

Head $0.6 \times$ as long as wide in dorsal view, Clypeus $2.5\text{--}2.6$ (HT: 2.5) \times as broad as high, sparsely punctate and polished, convex in lateral view, lower margin with a median concavity (Fig. 40N). Face $1.8\text{--}2.0$ (HT: 2.0) \times as broad as high, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 39A. Occipital carina complete. Length of malar space $0.5 \times$ as long as basal width of mandible. Base of mandible flat. POL $0.8\text{--}1.0$ (HT: 0.8) \times as long as OD. OOL $1.6 \times$ as long as OD. Antenna with 37–38 (HT: 38) flagellomeres. FL I $6.65 \times$ as long as maximum depth, $1.8\text{--}1.9$ (HT: 1.9) \times as long as FL II.

Mesosoma. Epomia absent. Mesoscutum with weak notaulus. Epicnemial carina present laterally and ventrally, its dorsal end situated slightly distant from anterior margin of mesopleuron. Speculum with large smooth area (Fig. 21C). Propodeum with all carinae except for anterior transverse carina. Lateromedian longitudinal carina and lateral longitudinal carina partly indistinct anteriorly (Fig. 21D). Area petiolaris with a median carina. Fore wing length 7.0–8.0 (HT: 8.0) mm. Areolet absent. Fore wing vein 1cu-a postfurcal to vein M&RS. Nervellus inclivous, intercepted posterior the middle. Tarsal claws simple. Hind femur $5.7\text{--}5.8$ (HT: 5.7) \times as long as maximum depth in lateral view. Hind tarsus slender (Fig. 41G). Ratio of length of hind first to fifth tarsomeres 4.05–4.2 (HT: 4.2): 2.0: 1.5: 0.9: 1.0.

Metasoma coriaceous. T I $1.5\text{--}1.6$ (HT: 1.5) \times as long as maximum width, with latero-median longitudinal carina, its posterior end situated near the spiracle. T II $0.85\text{--}1.0$ (HT: 1.0) \times as long as maximum width. Ovipositor sheath $0.18\text{--}0.22$ (HT: 0.18) \times as long as hind tibia.

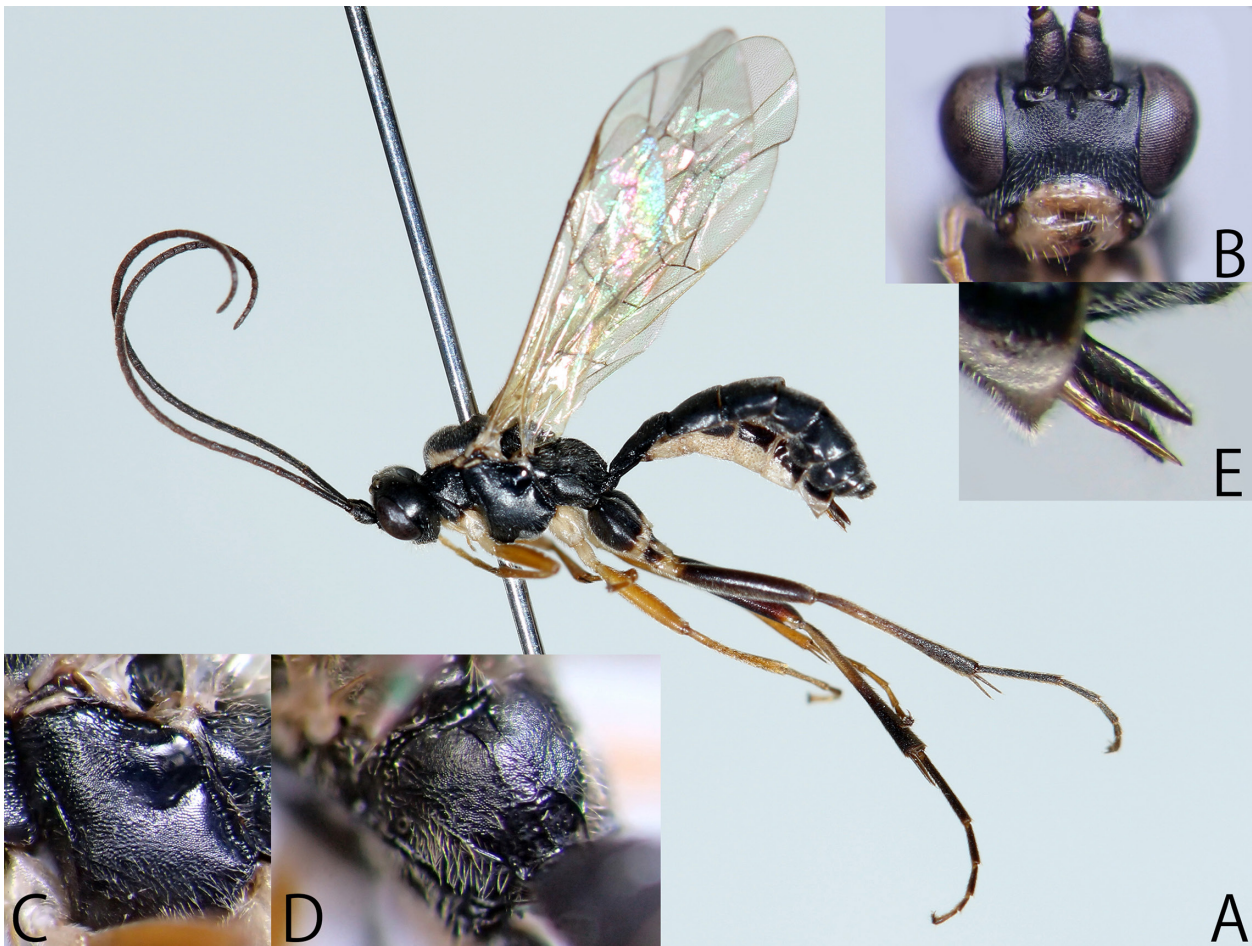


Fig. 21. *Hyperbatus ariminensis* sp. nov. (KPM-NK 84935, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron; D: propodeum, dorso-lateral view; E: ovipositor and ovipositor sheath.

Colouration (Figs. 21A–E). Body (excluding wings and legs) black. Clypeus, mandible except for teeth, palpi, ventral spot of scape, postero-dorsal corner of pronotum, a pair of large triangle markings of antero-lateral part of mesoscutum, tegula, subtegular ridge, posterior margins of T II to T VII, and membranous part of metasomal sternites whitish yellow. Wings hyaline. Veins and pterostigma yellowish brown except for whitish yellow wing base. Fore and mid coxae, trochanters, and trochantelli yellow. Fore and mid femora, tibiae, tibial spurs, and tarsi reddish brown to yellowish brown. Hind leg blackish brown. Apex of hind coxa and trochantellus whitish yellow. Subbasal area of hind tibia tinged with yellowish brown.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from the type locality, Arimine.

Remarks. This species resembles *H. nigrifemur* sp. nov. in the black face, hind femur, and ovipositor sheath and the length of malar space but can be distinguished by the black hind coxa (red in *H. nigrifemur*), the antenna with 37–38

flagellomeres (31 in *H. nigrifemur*), and the T I 1.5–1.6 × as long as maximum width (2.3 in *H. nigrifemur*).

***Hyperbatus borealis* sp. nov.**

(SJN: Kita-ko-maru-himebachi)

(Figs. 22A–E, 39B, 40O)

Type series. **Holotype:** JAPAN, KPM-NK 84936, F, Hokkaido, Hidaka Town, Uenzaru-gawa, 1–28. VIII. 2007, A. Ueda leg. (MsT).

Description. Female ($n = 1$). Body length 8.35 mm, matt and covered with silver setae.

Head 0.6 × as long as wide in dorsal view. Clypeus 2.5 × as broad as high, sparsely punctate and polished, convex in lateral view, lower margin with a median concavity (Fig. 40O). Face 1.95 × as broad as high, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 39B. Occipital carina complete. Length of malar space 0.4 × as long as basal width of mandible. Base of mandible flat. POL 1.0 × as long as OD. OOL 1.5 × as long as OD. Antenna with 39 flagellomeres. FL I 6.65 × as long as maximum depth, 1.65 × as long as FL II.

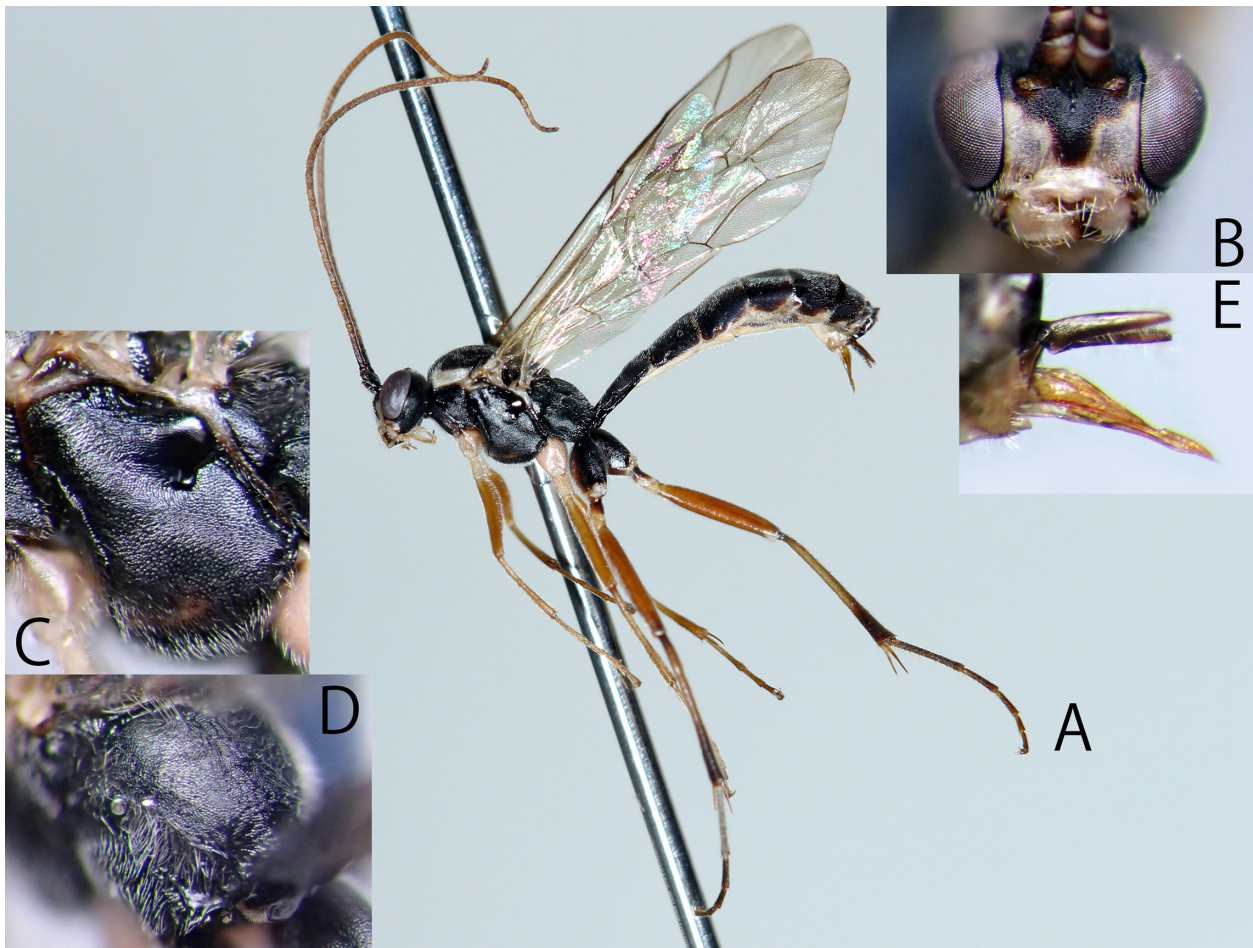


Fig. 22. *Hyperbatus borealis* sp. nov. (KPM-NK 84936, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron; D: propodeum, dorso-lateral view; E: ovipositor and ovipositor sheath.

Mesosoma polished. Epomia absent. Mesoscutum with weak notaulus. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with large smooth area (Fig. 22C). Propodeum with pleural carina, partly indistinct posterior transverse carina, lateral longitudinal carina except anterior part, largely indistinct lateromedian longitudinal carina (Fig. 22D). Fore wing length 7.6 mm. Areolet absent. Fore wing vein 1cu-a postfurcal to vein M&RS. Nervellus inclivous, intercepted posterior the middle. Tarsal claws simple. Hind femur $5.9 \times$ as long as maximum depth in lateral view. Hind tarsus slender. Ratio of length of hind first to fifth tarsomeres 4.0: 2.0: 1.5: 0.9: 1.0.

Metasoma coriaceous. T I $1.9 \times$ as long as maximum width, with latero-median longitudinal carina, its posterior end situated anterior the spiracle. T II $0.85 \times$ as long as maximum width. Ovipositor sheath $0.175 \times$ as long as hind tibia.

Colouration (Figs. 22A–E). Body (excluding wings and legs) black. A pair of lateral areas of face, clypeus, malar space, mandible except for teeth, palpi, ventral spots of scape and pedicel, postero-dorsal corner of pronotum, a

pair of large markings of antero-lateral part of mesoscutum, tegula, subtegular ridge, posterior margins of T II to T VII, lateral sides of T IV to T VII, and metasomal sternites except for some small sclerites whitish yellow. Wings hyaline. Veins and pterostigma brown to yellowish except for yellow wing base. Fore and mid coxae, trochanters, and trochantelli whitish yellow. Fore and mid femora, tibiae, tibial spurs, tarsi, and hind femur reddish brown. Hind coxa and trochanter black dorsally, reddish brown ventrally. Hind trochantellus whitish yellow. Hind tibia reddish brown, slightly darkened apically. Hind tibia and tarsus blackish brown except for subbasal part of tibia tinged with yellowish brown. Hind tibial spurs yellowish brown.

Male. Unknown.

Distribution. Japan (Hokkaido).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*borealis*” (northern). This species collected the northern Japan, Hokkaido.

Remarks. This species resembles *H. segmentator* in the face with the yellow area and the black ovipositor sheath, but can be distinguished by the antenna with 39

flagellomeres (28 in *H. segmentator*), the T I $1.9 \times$ as long as the maximum width (1.5 in *H. segmentator*), and the hind coxa black (red to reddish brown in *H. segmentator*).

***Hyperbatus montanus* sp. nov.**

(SJN: Miyama-ko-maru-himebachi)

(Figs. 23A–E, 39C, 40P)

Type series. Holotype: JAPAN, KPM-NK 84937, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, 13–25. VI. 2015, S. Shimizu leg. (MsT).

Description. Female ($n = 1$). Body length 8.2 mm, matt and covered with silver setae.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.4 \times$ as broad as high, sparsely punctate and polished, convex in lateral view, lower margin with a median concavity (Fig. 40P). Face $2.0 \times$ as broad as high, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 39C. Occipital carina complete. Length of malar space $0.4 \times$ as long as basal width of mandible. Base of mandible flat. POL $0.75 \times$ as long as OD. OOL $1.2 \times$ as long as OD. Antenna with 31 flagellomeres. FL I $5.7 \times$ as long as maximum depth, $1.55 \times$ as long as FL II.

Mesosoma polished. Epomia absent. Mesoscutum with weak notaulus. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with large smooth area (Fig. 23C). Propodeum with all carinae except for anterior transverse carina (Fig. 23D). Lateromedian longitudinal carina obtuse anteriorly. Fore wing length 7.5 mm. Areolet absent. Fore wing vein 1cu-a postfurcal to vein M&RS. Nervellus slightly inclivous, intercepted posterior the middle. Tarsal claws simple. Hind femur $5.4 \times$ as long as maximum depth in lateral view. Hind tarsus slender. Ratio of length of hind first to fifth tarsomeres 4.2: 2.0: 1.5: 0.9: 1.0.

Metasoma. T I $2.3 \times$ as long as maximum width, with latero-median longitudinal carina, its posterior end situated near the spiracle. T II $1.05 \times$ as long as maximum width. Ovipositor sheath $0.125 \times$ as long as hind tibia.

Colouration (Figs. 23A–E). Body (excluding wings and legs) black. Face except for median oval marking, clypeus, malar space, mandible except for teeth, palpi, ventral spot of scape, posterior part of propleuron, postero-dorsal and postero-ventral corners of pronotum, a pair of large triangle markings of antero-lateral part of mesoscutum, tegula, subtegular ridge, mesosternum, posterior margins

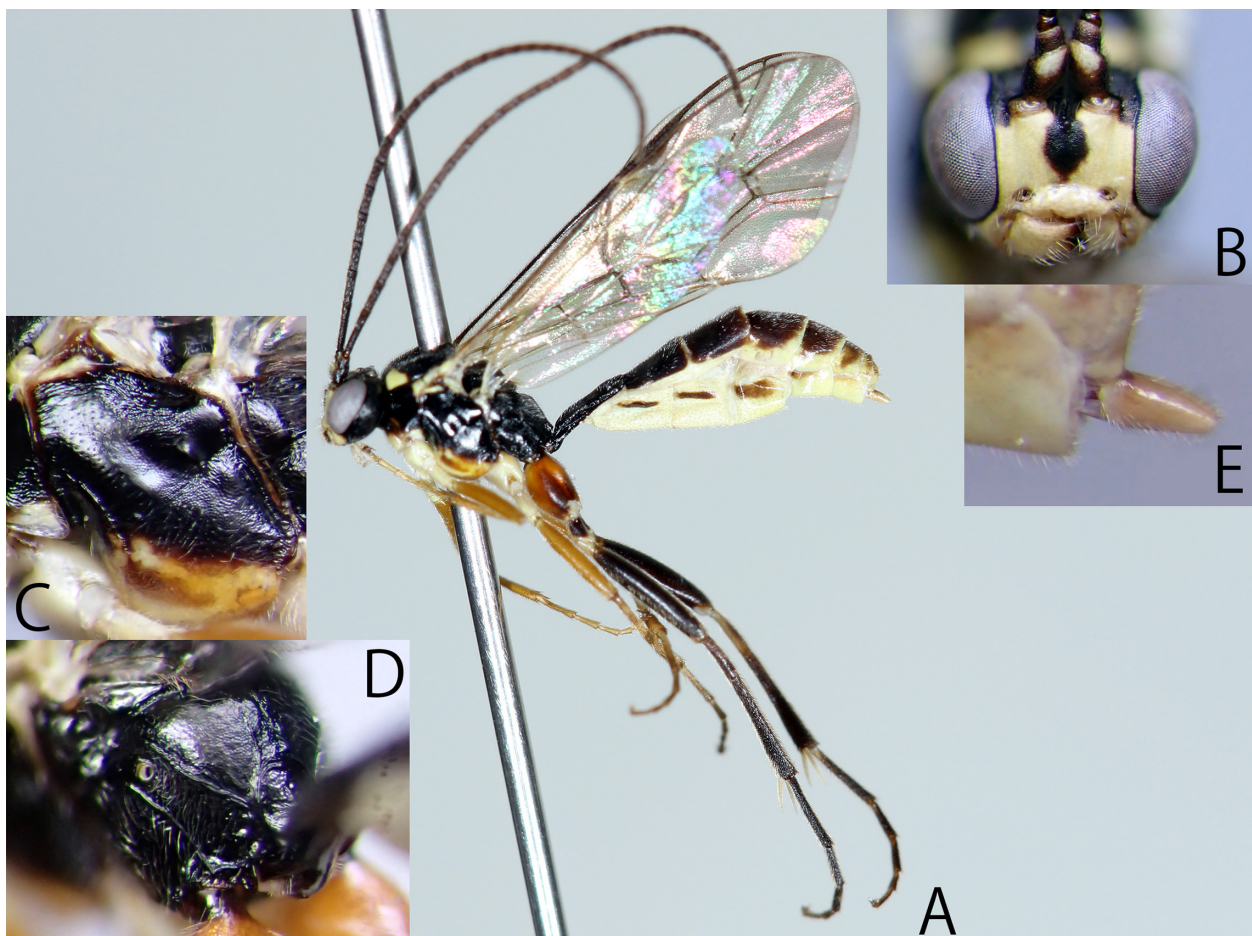


Fig. 23. *Hyperbatus montanus* sp. nov. (KPM-NK 84937, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron; D: propodeum, dorso-lateral view; E: ovipositor and ovipositor sheath.

of T II to T VII, lateral sides of T IV to T VII, and metasomal sternites except for some small sclerites yellow to whitish yellow. Ovipositor sheath pale yellow. Wings hyaline. Veins and pterostigma blackish brown except for yellow wing base. Fore and mid coxae, trochanters, and trochantelli yellow. Fore and mid femora, tibiae, tibial spurs, and tarsi reddish brown to yellowish brown. Hind leg blackish brown. Hind coxa largely tinged with reddish brown. Hind trochantellus and tibial spurs whitish yellow.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*montanus*” (mountainous). This species is found in mountainous areas.

Remarks. This species resembles *H. orbitalis* Thomson, 1895 in the body colouration but can be distinguished by the T I $2.3 \times$ as long as the maximum width (shorter than $2.0 \times$ in *H. orbitalis*) and the face with a median black oval mark (entirely yellow in *H. orbitalis*).

***Hyperbatus nigrifemur* sp. nov.**

(SJN: Ashibuto-ko-maru-himebachi)

(Figs. 24A–E, 39D, 40Q, 41H)

Type series. **Holotype:** JAPAN, KPM-NK 84938, F, Kyoto Pref., Miyadu City, Kamiseya, Seya-kogen, 18. VII. – 1. VIII. 2015, T. Hirooka & S. Fujie leg. (MsT). **Paratype:** JAPAN, KPM-NK 84939, F, Yamagawa Pref., Iide Town, Soegawa, 30. V. – 16. VI. 2015, Y. Okatsu & S. Shimizu leg. (MsT).

Description. Female ($n = 2$). Body length 8.0–8.1 (HT: 8.1) mm, covered with silver setae.

Head $0.6 \times$ as long as wide in dorsal view, matt. Clypeus $2.4 \times$ as broad as high, sparsely punctate and polished, convex in lateral view, lower margin with a median concavity (Fig. 40Q). Face 1.6 – 1.65 (HT: 1.65) \times as broad as high, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 39D. Occipital carina complete. Length of malar space $0.4 \times$ as long as basal width of mandible. Base of mandible flat. POL 1.2 – 1.5 (HT: 1.5) \times as long as OD. OOL 1.3 – 1.4 (HT: 1.4) \times as long as OD. Antenna with 32–33 (HT: 32) flagellomeres. FL I 5.0 – 5.7 \times as long as maximum depth, $1.8 \times$ as long as FL II.

Mesosoma polished and punctate. Epomia short. Pronotum largely smooth laterally. Mesoscutum with weak notaulus, interspace of punctures slightly coriaceous. Epicnemial carina present laterally and ventrally, its

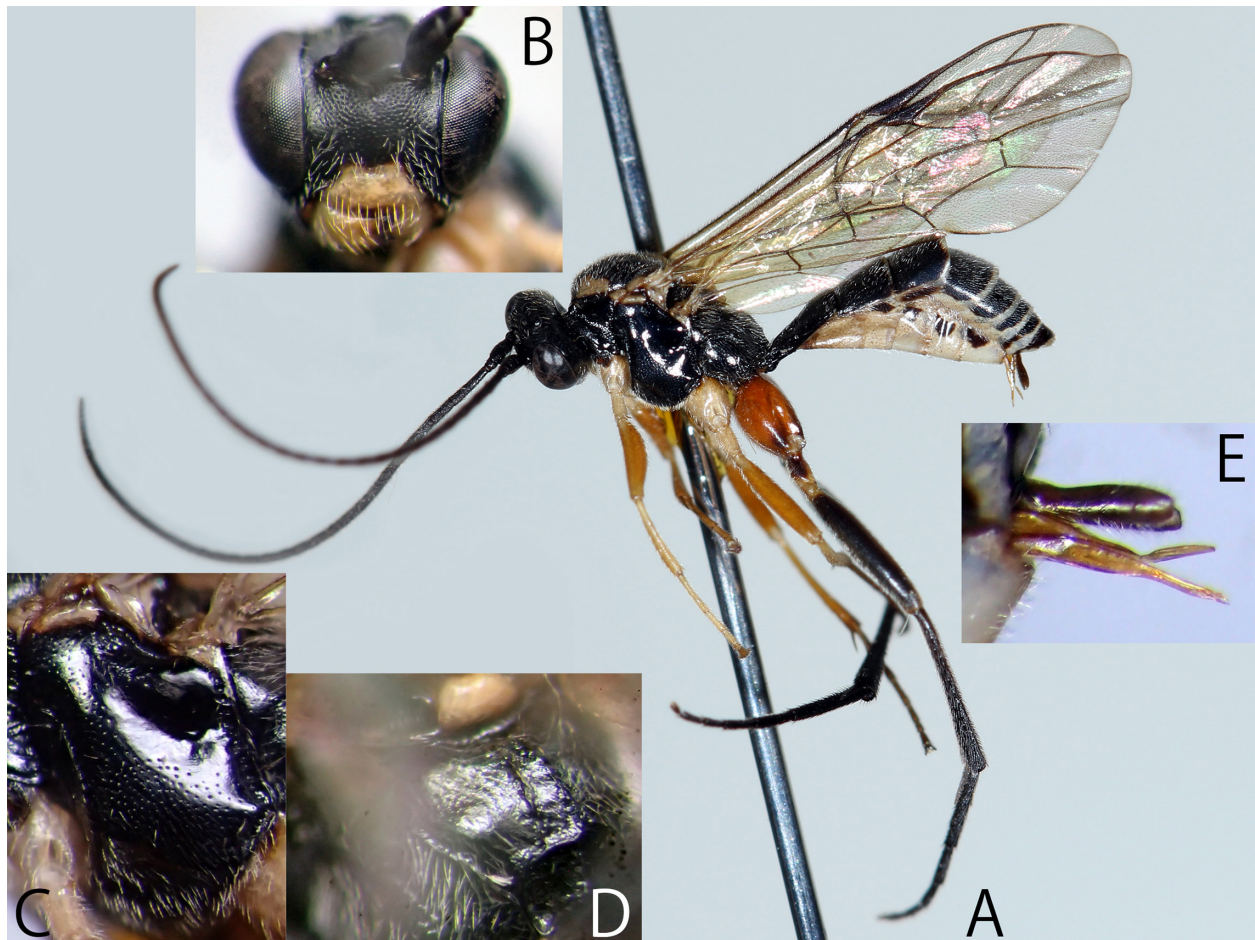


Fig. 24. *Hyperbatus nigrifemur* sp. nov. (KPM-NK 84958, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron; D: propodeum, dorso-lateral view; E: ovipositor and ovipositor sheath.

dorsal end situated near anterior margin of mesopleuron. Speculum with large smooth area (Fig. 24C). Propodeum with all carinae except for anterior transverse carina (Fig. 24D). Lateromedian longitudinal carina partly weak. Fore wing length 7.5–7.7 (HT: 7.7) mm. Areolet absent. Fore wing vein 1cu-a postfurcal to vein M&RS. Nervellus slightly inclivous, intercepted posterior the middle. Tarsal claws simple. Hind femur 4.8–4.9 (HT: 4.9) \times as long as maximum depth in lateral view. Hind tarsus robust (Fig. 41H). Ratio of length of hind first to fifth tarsomeres 4.2: 2.0: 1.45: 0.9: 1.0.

Metasoma matt. T I 1.2 \times as long as maximum width, with latero-median longitudinal carina, its posterior end situated near the spiracle. T II 0.65 \times as long as maximum width. Ovipositor sheath 0.2 \times as long as hind tibia.

Colouration (Figs. 24A–E). Body (excluding wings and legs) black. Clypeus, mandible except for teeth, palpi, postero-dorsal corner of pronotum, a pair of large markings of antero-lateral part of mesoscutum, tegula, subtegular ridge, posterior margins of T II to T VII, lateral sides of T IV to T VII, and metasomal sternites except for some small sclerites yellow to whitish yellow. Wings hyaline. Veins and pterostigma blackish brown except for yellow wing base. Fore and mid coxae, trochanters, and trochantelli yellow. Fore and mid femora, tibiae, tibial spurs, and tarsi reddish brown to yellowish brown. Hind leg blackish brown. Hind coxa reddish brown. Hind trochantellus whitish yellow.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*nigrī*” (black) plus “*femur*”. This species has black femur.

Remarks. This species resembles *Hyperbatus nigrifemur* **sp. nov.** (see remarks of *H. nigrifemur*).

Genus *Lagarotis* Förster, 1869

Lagarotis Förster, 1869: 205. Type species: *Ichneumon semicaligatus* Gravenhorst, 1820. Designated by Viereck (1914).

Daspletis Förster, 1869: 205. Type species: *Ichneumon debitor* Thunberg, 1822. Designated by Townes *et al.* (1965).

Oneista Förster, 1869: 207. Type species: *Oneista bohemani* Kriechbaumer, 1892 (= *Mesoleius ustulatus* Holmgren, 1857). Designated by Viereck (1914).

Nythophona Förster, 1869: 207. Type species: *Mesoleius ustulatus* Holmgren, 1857. Designated by Townes *et al.* (1965).

Dysantes Förster, 1869: 207. Type species: *Ichneumon debitor* Thunberg, 1822. Designated by Perkins (1962). *Lagarotus* Thomson, 1892: 1881. Emendation.

This is the first record of this genus from Japan. In this study, I describe a new species below.

***Lagarotis nigra* sp. nov.**

(SJN: Kuro-naga-maru-himebachi)

(Figs. 25A–D, 39E, 40R)

Type series. **Holotype:** JAPAN, KPM-NK 91258, F, Niigata Pref., Sado Is., Sado City, Kanaishinpo to Mt. Myokenzan, 4. VIII. 2009, K. Watanabe leg. **Paratypes:** JAPAN, KPM-NK 91257, F, Tochigi Pref., Ohtawara City, Ryujo-park, 15. VI. 2010, E. Katayama leg.; KPM-NK 91259, F, Kanagawa Pref., Hayama Town, Nagae, Sakurayama-Oyama rindo, 27. V. 2020, I. Kawashima leg.; KPMNK 91260, F, Toyama Pref., Toyama City, Arimine, Jurodani, 11–16. VIII. 2009, M. Watanabe *et al.* leg. (MsT); KPM-NK 91261, F, Gifu Pref., Yoro, Ogura-dani, Akaiwa, 13. VI. 2005, S. Ohkusa leg.; KPM-NK 91262, F, Ehime Pref., Saijyo City, Nishinokawatei, Mt. Ishizuchi, Tsuchigoya, 28. VII. 2018, K. Watanabe leg.

Description. Female ($n = 6$). Body length 8.9–12.5 (HT: 8.9) mm, matt and covered with silver setae.

Head 0.55–0.6 (HT: 0.6) \times as long as wide in dorsal view. Clypeus 2.5–2.6 (HT: 2.5) \times as broad as high, sparsely punctate, polished ventrally, weakly convex in lateral view, lower margin slightly concave medially or subtruncate (Fig. 40R). Face 1.7–1.8 (HT: 1.8) \times as broad as high, flat in lateral view. Dorsal profile of gena as Fig. 39E. Occipital carina complete. Length of malar space 0.7–0.75 (HT: 0.75) \times as long as basal width of mandible. Base of mandible flat. POL 1.0–1.25 (HT: 1.0) \times as long as OD. OOL 1.4–1.8 (HT: 1.7) \times as long as OD. Antenna with 38–42 (HT: 41) flagellomeres. FL I 5.0–5.7 (HT: 5.7) \times as long as maximum depth, 1.9–2.0 (HT: 1.9) \times as long as FL II.

Mesosoma. Epomia absent. Mesoscutum with weak notaulus. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with a smooth area (Fig. 25C). Propodeum with no carinae except for pleural carina and posterior transverse carina. Posterior transverse carina sometimes obscured partly. Lateromedian longitudinal carina sometimes weakly and partly present. Fore wing length 7.2–9.7 (HT: 7.2) mm. Areolet present, shortly petiolated, received vein 2m-cu at the outer angle (Fig. 25D). Fore wing vein 1cu-a postfurcal to vein M&RS. Nervellus subvertical, intercepted slightly posterior the middle. Tarsal claws simple. Hind femur

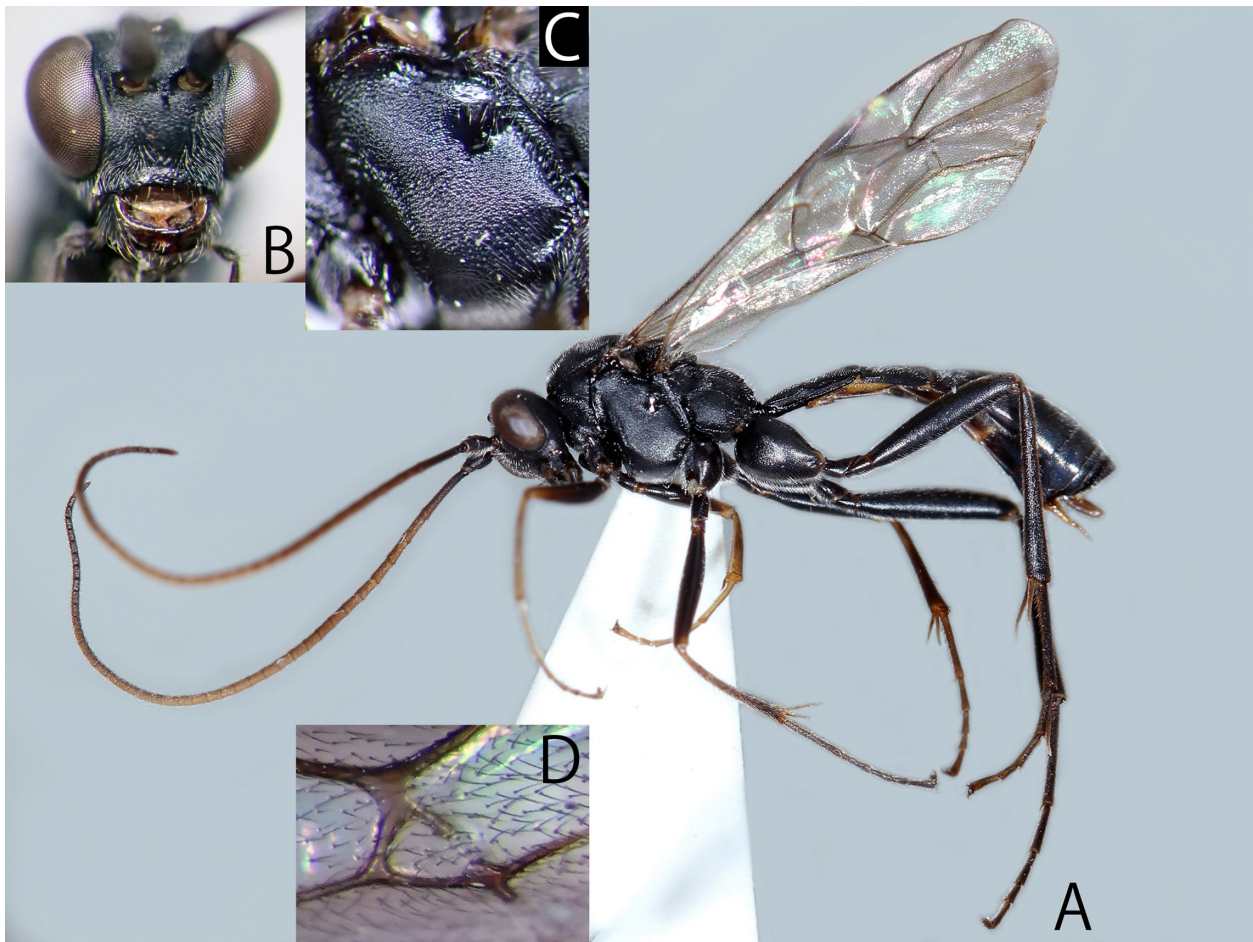


Fig. 25. *Lagarotis nigra* sp. nov. (KPM-NK 91258, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron; D: areolet.

4.55–5.25 (HT: 5.25) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.3–4.6 (HT: 4.3): 2.0: 1.5: 0.9: 1.0–1.05 (HT: 1.05).

Metasoma. T I 1.9–2.0 (HT: 2.0) \times as long as maximum width. T II 0.85–0.9 (HT: 0.88) \times as long as maximum width. Ovipositor sheath 0.2–0.25 (HT: 0.2) \times as long as hind tibia.

Colouration (Figs. 25A–D). Body (excluding wings) black. Ventral surface of flagellum fore and mid tibiae, tibial spurs, and coxae, hind tibial spurs, and ovipositor sheath partly yellowish brown. Ovipositor reddish brown to yellowish brown. Wings hyaline. Veins and pterostigma blackish brown except for dark brown wing base.

Male. Unknown.

Distribution. Japan (Honshu and Shikoku).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*niger*” (black). The body colour of this species is black.

Remarks. This species resembles *Lag. beijingensis* Sheng, Sun & Li, 2020 in black body colouration but can be distinguished by the antenna with 38–42 flagellomeres (52–53 \times in *Lag. beijingensis*), the

length of the malar space 0.7–0.75 \times as long as the basal width of mandible (0.6 \times in *Lag. beijingensis*), the T I 1.9–2.0 \times as long as the maximum width (2.0 \times in *Lag. beijingensis*), and the ventral surface of flagellum at least partly yellowish brown (entirely black in *Lag. beijingensis*).

Genus *Lamachus* Förster, 1869

Lamachus Förster, 1869: 206. Type species: *Tryphon lophyrum* Hartig, 1838 (= *T. frutetorum* Hartig, 1838). Designated by Viereck (1914).

Zaphthora Förster, 1869: 206. Type species: *Tryphon eques* Hartig, 1838. Designated by Townes *et al.* (1965).

Adexioma Förster, 1869: 206. Type species: *Adexioma angularia* Davis, 1897. Designated by Viereck (1914).

Torocampus Schmiedeknecht, 1913: 2797. Type species: *Tryphon eques* Hartig, 1838. Included by Schmiedeknecht (1914).

Bathyglyptus Schmiedeknecht, 1913: 2802. Type species: *Bathyglyptus australis* Schmiedeknecht, 1914. Included by Schmiedeknecht (1914). Name preoccupied.

Three species, *Lam. albopictus* Cushman, 1937, *Lam. gilpiniae* Uchida, 1955, and *Lam. iwatai* Momoi, 1962, have been recorded from Japan. In this study, I redescribe *Lam. albopictus* and newly describe a new species below.

Key to Japanese species of *Lamachus*

1. Notaulus extending behind of the middle of mesoscutum. T III and T IV red.

..... *Lamachus iwatai* Momoi, 1962
-. Notaulus not extending the middle of mesoscutum. Metasomal tergites black, its posterior margin sometimes tinged with white (Figs. 26A, 27A).

..... 2
2. Propodeum with lateromedian longitudinal carina (more or less indistinct partly). Latero-median carina of T I distinct. T I $1.5 \times$ as long as maximum width. Upper tooth of mandible as long as lower tooth.

..... *Lamachus gilpiniae* Uchida, 1955
-. Propodeum without lateromedian longitudinal carina (Figs. 26C, 27D). Latero-median carina of T I indistinct or absent. T I more than $1.6 \times$ as long as maximum width. Upper tooth of mandible slightly longer than lower tooth.

..... 3
3. Hind coxa black with white area(s) (at least ventrally) (Fig. 26A). Hind femur and tibia black except for white band (Fig. 26A). Length of T I $1.7\text{--}2.0 \times$ as long as maximum width.

..... *Lamachus albopictus* Cushman, 1937
-. Hind coxa, femur, and tibia reddish brown except for narrow black base (Fig. 27A). T I $2.1\text{--}2.3 \times$ as long as maximum width.

..... *Lamachus montanus* sp. nov.

Lamachus albopictus Cushman, 1937

(SJN: Matsunokurohoshibachi-maru-himebachi)
(Figs. 26A–F, 39F, 40S)

Lamachus albopictus Cushman, 1937: 37.

Description. Female ($n = 2$). Body length 9.7 mm, matt and covered with silver setae.

Head $0.53 \times$ as long as wide in dorsal view. Clypeus $2.3 \times$ as broad as high, sparsely punctate and polished, almost flat in lateral view, lower margin with a median concavity (Fig. 40S). Face $2.0 \times$ as broad as high, finely punctate, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 39F. Occipital carina complete. Length of malar space $0.5 \times$ as long as basal width of

mandible. Upper tooth of mandible slightly longer than lower tooth. Base of mandible weakly convex. POL $1.5 \times$ as long as OD. OOL $1.0 \times$ as long as OD. Antenna with 38 flagellomeres. FL I $5.0 \times$ as long as maximum depth, $1.8 \times$ as long as FL II.

Mesosoma densely and finely punctate. Epomia absent. Mesoscutum with weak notaulus, its posterior end not extending the middle of mesoscutum. Epicnemial carina weakly present (partly obscured) laterally and ventrally, its dorsal end situated distant from anterior margin of mesopleuron. Speculum without smooth area. Propodeum without carinae except for pleural carina and partly indistinct posterior transverse carina (Fig. 26C). Fore wing length 8.0 mm. Areolet present, pointed anteriorly, received vein 2m-cu at the outer angle (Fig. 26E). Fore wing vein 1cu-a postfurcal to vein M&RS. Nervellus subvertical, intercepted posterior the middle. Tarsal claws simple. Hind femur $5.3 \times$ as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.8: 2.0: 1.25: 0.9: 1.0.

Metasoma. T I $1.7 \times$ as long as maximum width, densely and finely punctate, with latero-median longitudinal carina, its posterior end situated near the spiracle. T II $0.8 \times$ as long as maximum width, densely and finely punctate. T III densely and finely punctate anteriorly, sparsely and finely posteriorly. Ovipositor sheath $0.2 \times$ as long as hind tibia.

Colouration (Figs. 26A–F). Body (excluding wings and legs) black. A large oval spot and a pair of small lateral spots of face, clypeus, mandible except for teeth, palpi, median part of collar, postero-dorsal corner of pronotum, a pair of small spots of antero-lateral part of mesoscutum, apical spot of scutellum, and postscutellum whitish yellow. Posterior margins of T II to T VII narrowly tinged with whitish yellow. Membranous part of metasomal sternites partly tinged with whitish yellow. Wings hyaline. Veins and pterostigma blackish brown. Fore and mid coxae, trochanters, and trochantelli black dorsally, white ventrally. Fore and mid femora blackish brown, each apical part paler than each basal part. Fore tibia, tibial spurs, and tarsus reddish yellow except for basal white area of tibia. Mid tibia, tibial spurs, and tarsus blackish brown except for basal white area of tibia. Hind leg black except for subbasal white band of tibia.

Male ($n = 4$). Similar to female. Body length 7.8–9.6 mm. Clypeus $2.2 \times$ as broad as high. Face $1.8\text{--}1.9 \times$ as broad as high. Length of malar space $0.4\text{--}0.5 \times$ as long as basal width of mandible. POL $1.3\text{--}1.7 \times$ as long as OD. OOL $1.0\text{--}1.1 \times$ as long as OD. Antenna with 36–37 flagellomeres. Fore wing length 6.4–7.8 mm. Nervellus subvertical, intercepted posterior or at the middle. Hind

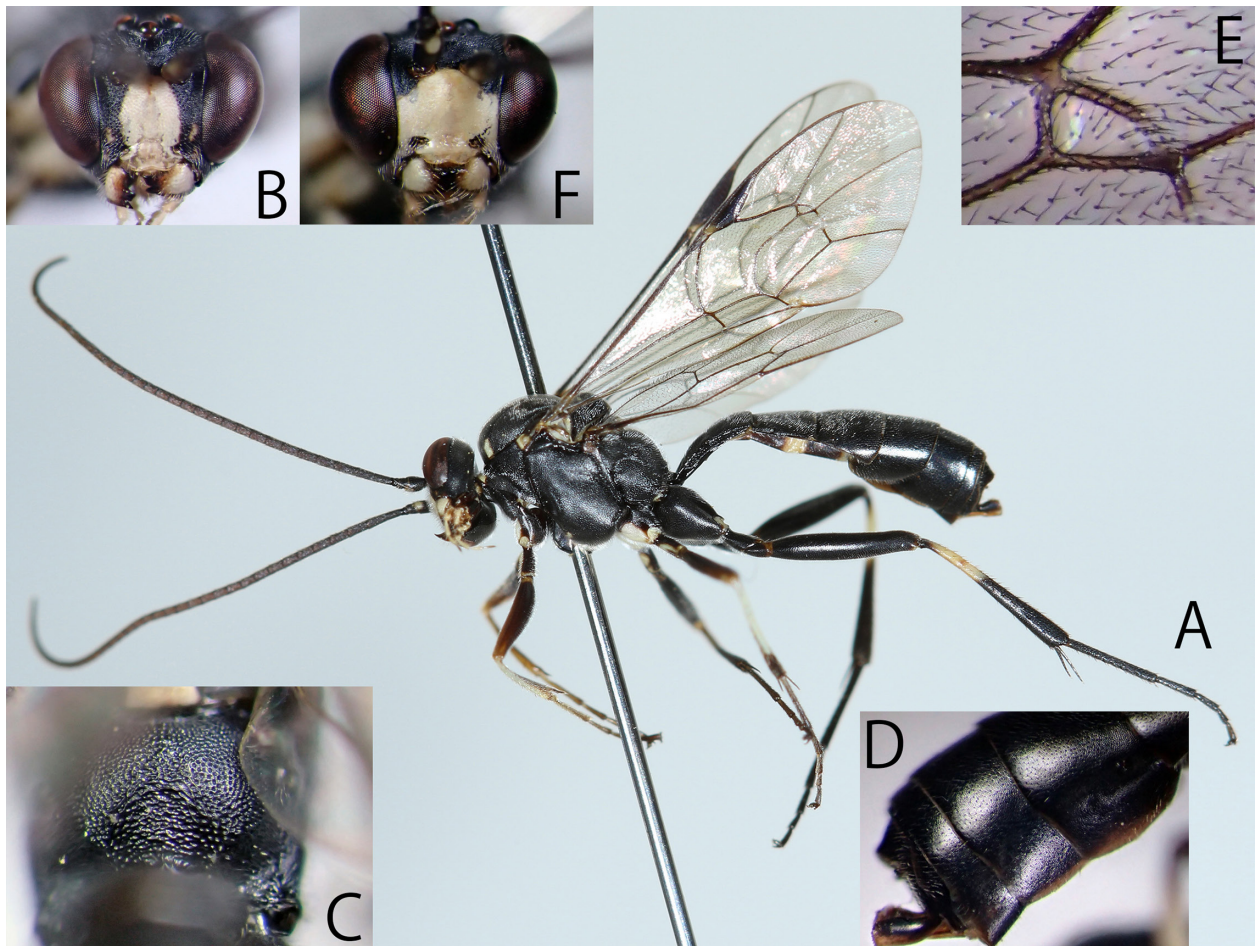


Fig. 26. *Lamachus albopictus* Cushman, 1937 (A–E: KPM-NK 84940, female; F: KPM-NK 84942, male) — A: lateral habitus; B, F: head, frontal view; C: propodeum, dorsal view; D: apical part of metasoma, lateral view; E: areolet.

femur $5.2\text{--}5.4 \times$ as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres $4.7\text{--}4.8$: 2.0 : $1.2\text{--}1.3$: $0.85\text{--}0.9$: 0.9 . T I $1.8\text{--}2.0 \times$ as long as maximum width. T II $0.75\text{--}0.85 \times$ as long as maximum width. Face except for dorsal parts along each facial orbit entirely yellow (Fig. 26F). Scape with a ventral yellow spot (Fig. 26F).

Material examined. JAPAN: KPM-NK 84940–84943, 1 F & 3 M, Gunma Pref., Tsumagoi Vil., Kanbara, Takamine-kogen, 3. IX. 2015, K. Watanabe leg.; SEHU, F (paratype), Nagano Pref., Nagawa Vil., 24–30. IX. 1936 host cocoon coll., 10. XI. 1936 em., R. W. Burrell leg.; SEHU, M (paratype), Kagoshima Pref., Toso, 9. I. 1936 host coll., 9. XI. 1936 em., R. W. Burrell leg.

Distribution. Japan (Honshu and Kyushu).

Bionomics. A sawfly, *Diprion nipponicus* Rohwer, 1910 (Diprionidae), was recorded as host (Cushman, 1937).

Remarks. The specimens collected by the author differ slightly from the type series in the absence of some lateral white markings on the metasomal tergites (Fig. 26D; with markings in type series). While I conclude that this is an intraspecific variation of the species.

***Lamachus montanus* sp. nov.**

(SJN: Takamine-maru-himebachi)

(Figs. 27A–E, 39G, 40T)

Type series. **Holotype:** JAPAN, KPM-NK 84944, F, Gunma Pref., Tsumagoi Vil., Kanbara, Takamine-kogen, 3. IX. 2015, K. Watanabe leg. **Paratypes:** JAPAN, KPM-NK 84945–84955, 11 F, same data of holotype.

Description. Female ($n = 12$). Body length $7.5\text{--}10.0$ (HT: 8.5) mm, matt and covered with silver setae.

Head $0.53 \times$ as long as wide in dorsal view. Clypeus $2.0\text{--}2.2$ (HT: 2.0) \times as broad as high, sparsely punctate and polished, almost flat in lateral view, lower margin with a median concavity (Fig. 40T). Face $1.9\text{--}2.0$ (HT: 2.0) \times as broad as high, finely punctate, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 39G. Occipital carina complete. Length of malar space $0.5\text{--}0.55$ (HT: 0.5) \times as long as basal width of mandible. Upper tooth of mandible slightly longer than lower tooth. Base of mandible weakly convex. POL $1.25\text{--}1.4$ (HT: 1.25) \times as long as OD. OOL $1.3\text{--}1.4$ (HT: 1.3) \times as long as OD. Antenna with 39–40 (HT: 40) flagellomeres. FL I $5.0 \times$ as long as maximum depth, $1.6\text{--}1.8$ (HT: 1.8) \times as long as FL II.

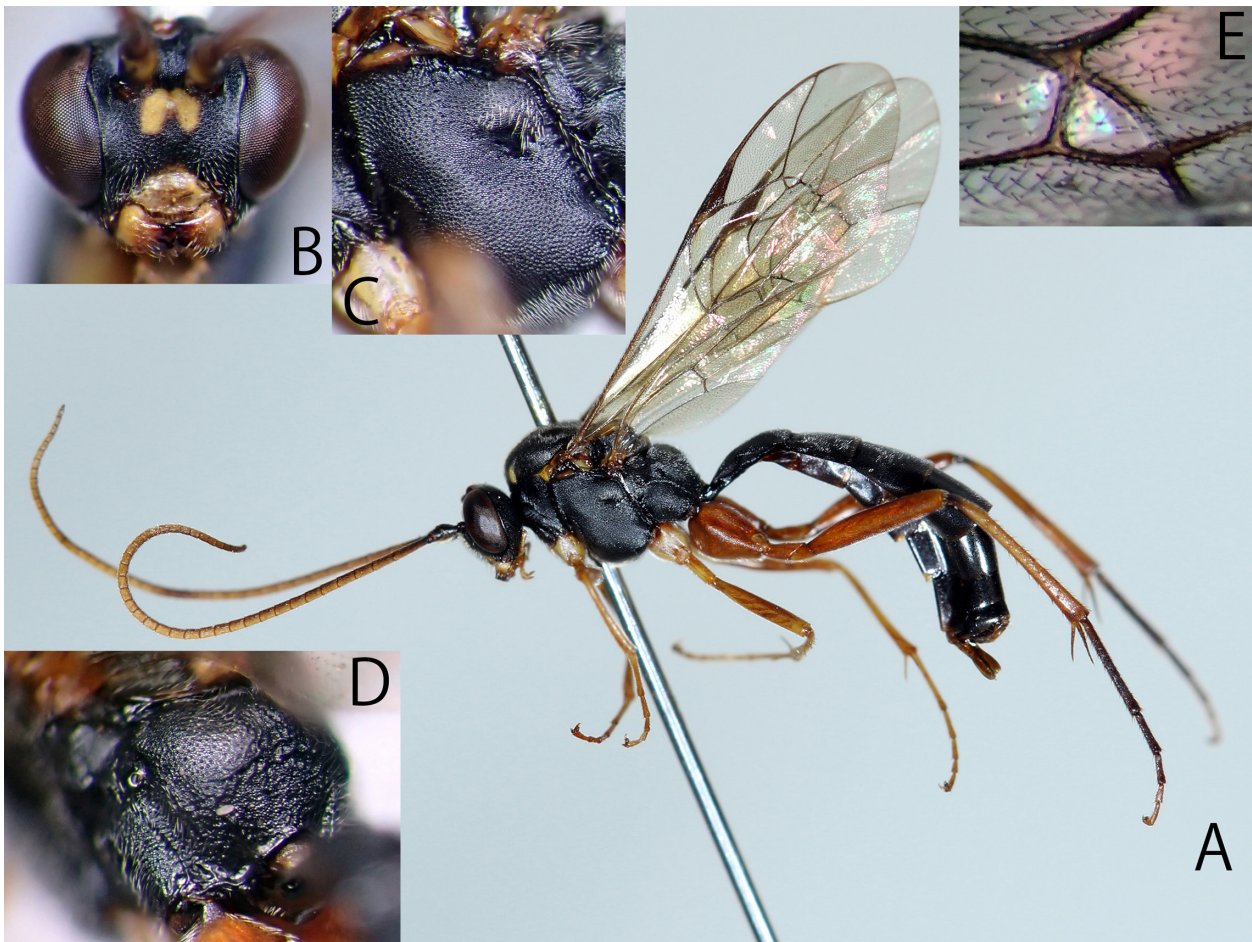


Fig. 27. *Lamachus montanus* sp. nov. (KPM-NK 84944, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron; D: propodeum, dorso-lateral view; E: areolet.

Mesosoma densely and finely punctate. Epomia absent. Mesoscutum with weak notaulus, its posterior end not extending the middle of mesoscutum. Epicnemial carina weakly present (partly obscured) laterally and ventrally, its dorsal end situated slightly distant from anterior margin of mesopleuron. Speculum with small smooth area (Fig. 27C). Propodeum without carinae except for pleural carina and partly indistinct posterior transverse carina (Fig. 27D). Fore wing length 7.0–8.7 (HT: 8.0) mm. Areolet present, pointed anteriorly, received vein 2m-cu at the outer angle (Fig. 27E). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical, intercepted slightly posterior the middle. Tarsal claws simple. Hind femur 5.8–6.1 (HT: 5.9) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.8–5.0 (HT: 5.0): 2.0: 1.3–1.35 (HT: 1.3): 0.9–0.95 (HT: 0.9): 0.9–1.0 (HT: 0.9).

Metasoma. T I 2.1–2.3 (HT: 2.1) \times as long as maximum width, densely and finely punctate, with latero-median longitudinal carina, its posterior end situated near the spiracle. T II 0.95–1.0 (HT: 0.95) \times as long as maximum width, largely densely and finely punctate. Ovipositor sheath 0.25 \times as long as hind tibia. T III sparsely and finely posteriorly.

Colouration (Figs. 27A–E). Body (excluding wings and legs) black. A pair of small spots of face below antennal sockets, clypeus, mandible except for teeth, palpi, postero-dorsal corner of pronotum, a pair of small spots of antero-lateral part of mesoscutum, scutellum, postscutellum, tegula, and subtegular ridge yellow. Posterior margins of T II to T VII and metasomal sternites narrowly tinged with whitish yellow. Flagellum more or less tinged with reddish brown. Wings hyaline. Veins and pterostigma blackish brown except for yellowish brown wing base. Fore and mid legs reddish yellow to reddish brown. Hind leg reddish brown. Base of hind tibia narrowly tinged with black. Hind tarsus more or less tinged with blackish brown.

Male. Unknown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “montanus” (mountainous). This species is found in mountainous areas.

Remarks. This species resembles *Lam. coalitorius* (Thunberg, 1822) and *Lam. dispar* (Holmgren, 1857) in body colouration, but can be distinguished by the T I 2.1–2.3 \times as long as maximum width (at most 1.8 \times in both species). This species also resembles *Lam. eques* (Hartig,

1838) in the elongated T I, but can be distinguished by the entirely black metasomal tergites (with a conspicuous red part of T III and T IV in *Lam. eques*).

Genus *Leipula* Townes, 1970

Leipula Townes, 1970: 112. Type species: *Leipula lata* Townes, 1970. Original designation.

A single species, *Lei. angusta* Townes, 1970, has been recorded from Japan. In this study, I newly record this species from Hokkaido and describe a new species below.

Key to World species of *Leipula*

1. T I $0.95 \times$ as long as maximum width. Scutellum with a yellow area. Clypeus yellow.
..... *Leipula lata* Townes, 1970
- T I more than $1.5 \times$ as long as maximum width. Scutellum without a yellow area. Clypeus black or partly brown.
..... 2
2. Frons without a pair of conical tubercles. T I $1.6 \times$ as long as maximum width. Hind coxa black (Fig.

28A). T III reddish yellow with a black median band (Figs. 28A, D).

..... *Leipula angusta* Townes, 1970
-. Frons with a pair of conical tubercles (Fig. 39H). T I $2.35\text{--}2.75 \times$ as long as maximum width. Hind coxa reddish yellow (Fig. 29A). T III reddish yellow with black markings (Fig. 29A).

..... *Leipula pulchra* sp. nov.

Leipula angusta Townes, 1970
(SJN: Townes-maru-himebachi)
(Figs. 28 A–D)

Leipula angusta Townes, 1970: 112.

Description. See Townes (1970).

Materials examined. AEIC, F (holotype), Nagano Pref., Kamikochi, 22. VII. 1954, Townes family leg.; KPM-NK 84785, F, Hokkaido, Sapporo City, Hitsujigaoka, 21–28. VII. 2008, K. Konishi leg.

Distribution. Japan (Hokkaido and Honshu).

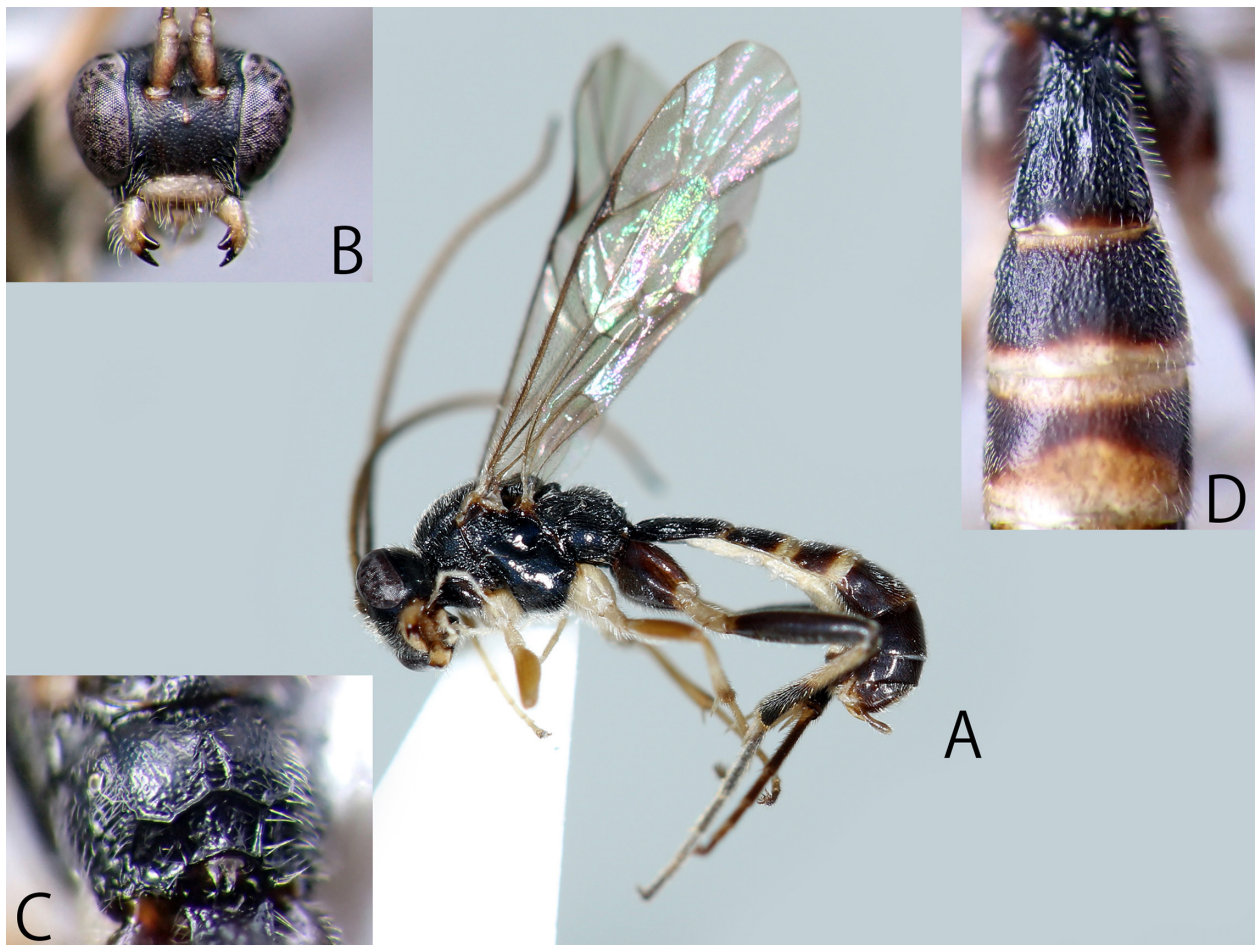


Fig. 28. *Leipula angusta* Townes, 1970 (KPM-NK 84785, female) — A: lateral habitus; B: head, frontal view; C: propodeum, dorso-lateral view; D: T I–T III, dorsal view.

***Leipula pulchra* sp. nov.**

(New SJN: Noudai-maru-himebachi)

(Figs. 29A–E, 39H, 40U)

Type series. Holotype: JAPAN, KPM-NK 84905, F, Kanagawa Pref., Atsugi City, Funako, campus of Tokyo University of Agriculture, 22. IV. – 16. V. 2016, Y. Kato & S. Koizumi leg. (MsT). **Paratypes:** JAPAN, KPM-NK 84906, F, same data of holotype; KPM-NK 84907, 84908, 2 F, ditto, 6. V. – 7. VI. 2016, Y. Kato & S. Koizumi leg. (MsT); KPM-NK 84909, M, Kanagawa Pref., Odawara City, Kamisoga, 29. IV. 2018, T. Amano leg.; KPM-NK 84910, F, Gifu Pref., Toki City, Dachi, 22. IV. – 22. VI. 2007, S. Takemoto leg. (MsT).

Description. Female ($n = 5$). Body length 5.9–7.6 (HT: 6.3) mm, polished and covered with dense punctures and silver setae.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus 2.4 – 2.5 (HT: 2.4) \times as broad as high, rather sparsely punctate, weakly convex in lateral view, lower margin rounded (Fig. 40U). Face 1.7 – 1.8 (HT: 1.8) \times as broad as high, almost flat in lateral view. Maximum length of gena in lateral view 0.6 – 0.7 (HT: 0.6) \times basal width of mandible. Frons

with a pair of conical tubercles (Fig. 39H). Dorsal profile of gena as Fig. 39H. Occipital carina complete. Length of malar space 0.6 – 0.8 (HT: 0.8) \times as long as basal width of mandible. POL 1.0 – 1.2 (HT: 1.15) \times as long as OD. OOL 1.9 – 2.0 (HT: 2.0) \times as long as OD. Antenna with 37–40 (HT: 40) flagellomeres. FL I $6.65 \times$ as long as maximum depth, 1.65 – 1.8 (HT: 1.65) \times as long as FL II.

Mesosoma. Epomia absent. Mesoscutum without notaulus. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum with large smooth area. Mesopleuron with irregular rugae around smooth speculum. Propodeum with no carinae except for posterior parts of lateromedian longitudinal carina (Fig. 29C). Pleural carina largely absent posteriorly. Fore wing length 4.8 – 5.8 (HT: 5.4) mm. Areolet present, shortly petiolated anteriorly, received vein 2m-cu slightly based of the outer angle (Fig. 29D). Fore wing vein 1cu-a interstitial or postfurcal (HT: postfurcal) to vein M&RS. Nervellus subvertical, intercepted at or slightly posterior the middle. Hind femur 4.9 – 5.2 (HT: 5.0) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.1 – 4.5 (HT: 4.1): 2.0 : 1.3 – 1.4 (HT: 1.4): 0.8 – 0.9 (HT: 0.8): 1.2 – 1.35 (HT: 1.35).

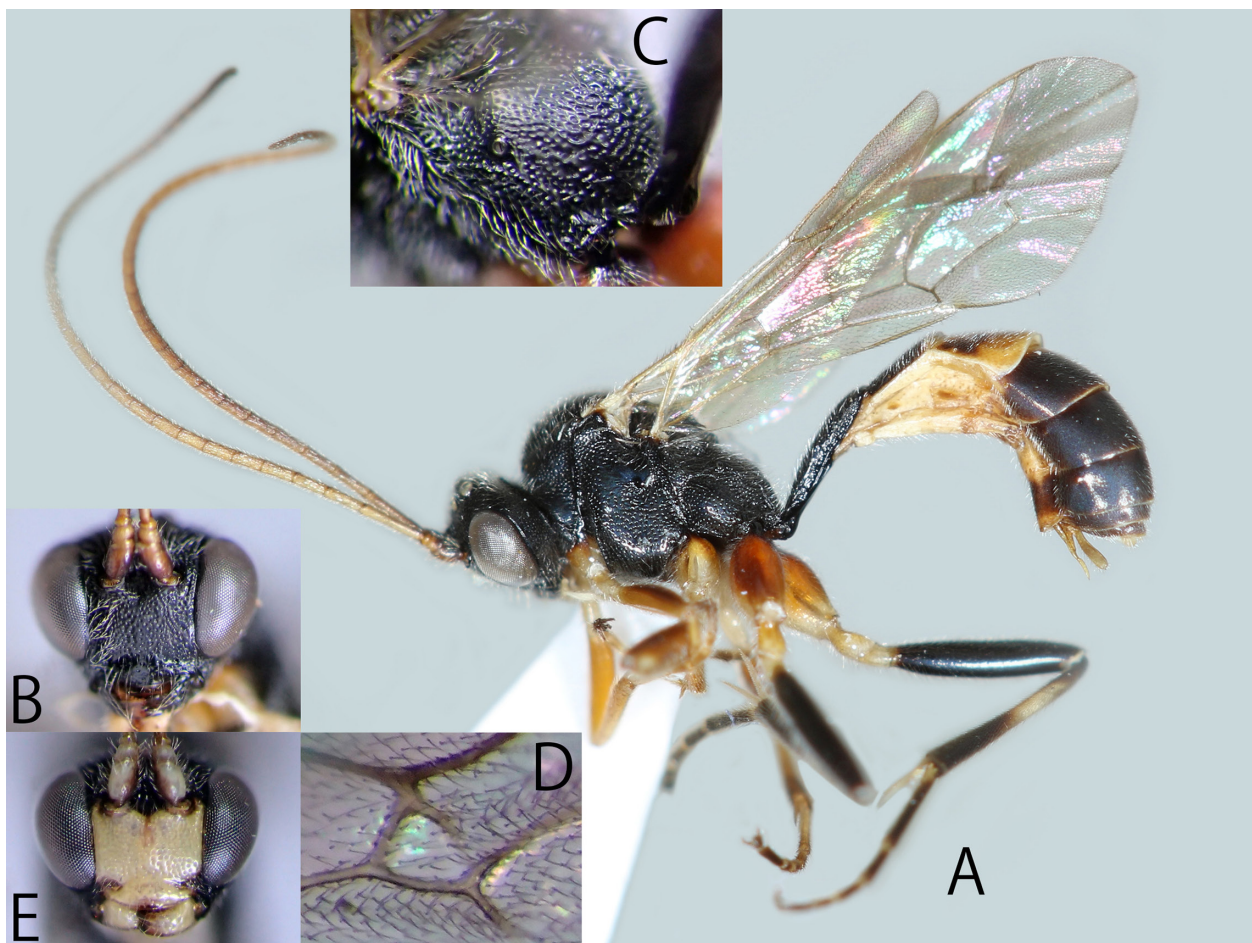


Fig. 29. *Leipula pulchra* sp. nov. (A–D: KPM-NK 84905, holotype, female; E: KPM-NK 84909, male) — A: lateral habitus; B, E: head, frontal view; C: propodeum, dorso-lateral view; D: areolet.

Metasoma. T I 2.35–2.75 (HT: 2.35) \times as long as maximum width. T II 0.8–1.0 (HT: 0.8) \times as long as maximum width. T III to T VII finely punctate. Ovipositor sheath 0.2–0.25 (HT: 0.25) \times as long as hind tibia. Ovipositor with wide dorsal concavity.

Colouration (Figs. 29A–E). Body (excluding wings and legs) black. Apex of mandibular teeth and ventral surfaces of scape and pedicel brown. Flagellum, posterior margin of T II, TIII except for small black area(s), membranous part of metasomal sternites, ovipositor sheath, and ovipositor yellowish brown to whitish yellow. Tegula whitish yellow. Sclerotized part of metasomal sternites sometimes partly tinged with dark brown. Wings hyaline. Veins and pterostigma blackish brown except for yellowish-brown wing base. Fore and mid legs reddish yellow except for coxae, trochanters and trochantelli partly to entirely yellow. Hind coxa reddish yellow, its apex more or less tinged with whitish yellow. Hind trochanter and trochantellus whitish yellow. Hind femur black except for narrow whitish yellow base. Hind tibia black except for subbasal whitish yellow band. Hind tibial spurs whitish yellow. Hind tarsus blackish brown to black, base of each segment narrowly tinged with whitish yellow. Whitish yellow areas of hind tarsus larger than female.

Male ($n = 1$). Similar to female. Face 1.6 \times as broad as high. Length of malar space 0.5 \times as long as basal width of mandible. OOL 1.7 \times as long as OD. FL I 5.7 \times as long as maximum depth. Hind femur 4.7 \times as long as maximum depth in lateral view. Face, clypeus, and mandible except for teeth yellow (Fig. 29E).

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*pulchra*” (pretty and beautiful).

Remarks. This species can be distinguished from other species by the frons with a pair of tubercles (absent in other species) and the T I 2.35–2.75 \times as long as maximum width (other species shorter than 1.7 \times ; see above key).

Genus *Mesoleius* Holmgren, 1856

Mesoleius Holmgren, 1856: 69. Type species: *Tryphon aulicus* Gravenhorst, 1829. Designated by Viereck (1912). *Allocritus* Förster, 1869: 211. Type species: *Mesoleius tenuiventris* Holmgren, 1858. Designated by Perkins (1962).

Cryptocentrus Walsh, 1873: 156. Type species: *Tryphon submarginatus* Cresson, 1864. Monotypic. Name preoccupied.

Alfkenia Pfankuch, 1906: 89. Type species: *Ichneumon*

integrator Müller, 1776. Monotypic.

Mesolius Pfankuch, 1906: 85. Emendation.

Habrodemus Schmiedeknecht, 1913: 2799. Type species: *Mesoleius elongatus* Brischke, 1871. Included by Schmiedeknecht (1914).

Four species, *Mesolei. alekhinoi* Kasparyan, 2000, *Mesolei. aulicus* (Gravenhorst, 1829), *Mesolei. nigrans* Kasparyan, 2001, and *Mesolei. pyriformis* (Ratzeburg, 1852), have been recorded from Kunashiri Island, Japan, but I have found more than five indeterminate species from Japan. The taxonomic treatment of these species except for a single species requires the additional specimens and comparison with European species. In this study, I describe a new species below.

Preliminary key to Japanese species of *Mesoleius* (female only)

(modified from the key in Kasparyan (2000, 2001))

1. T I longer than 1.8 \times as long as maximum width. And/or some metasomal tergites entirely or mainly reddish brown to red. And/or mesopleuron with distinct punctation.

..... *Mesoleius* spp.

-. T I shorter than 1.75 \times as long as maximum width. And metasomal tergites black (posterior margins sometimes narrowly tinged with yellow or white). And mesopleuron without distinct punctation, or, when punctation distinct, tibia reddish yellow or dark reddish brown, without white part.

..... 2

2. Face yellow. Hind coxa and femur red. Mesopleuron and metapleuron black. Ratio of minimum length of gena to basal width of mandible: 0.35–0.45. Area petiolaris of propodeum short and semicircular, its length ca. 0.25 \times dorsal length of propodeum. Antenna with 33–36 flagellomeres. Fore wing vein 1cu-a nearly interstitial to vein M&RS. T III usually with reddish triangular spot at base.

..... *Mesoleius pyriformis* (Ratzeburg, 1852)

-. Face black (Fig. 30B). Other character states various.

..... 3

3. Hind tibia uniformly pale reddish brown, red with darkened apex, or less frequently, nearly greyish blackish brown. And/or metasomal sternites mainly white.

..... *Mesoleius* spp.

-. Hind tibia white or whitish yellow medially, blackish brown apically and occasionally at base (Fig. 30A). Metasomal sternites mainly black (Fig. 30A).

..... 4

4. Mesopleuron with largely smoothed and shining speculum. Hind leg black with yellow trochantellus and white band of tibia. Ratio of minimum length of gena to basal width of mandible: 0.35. Antenna with 35 flagellomeres. T I $1.6 \times$ as long as maximum width. Fore wing 6.8 mm.

..... *Mesoleius nigrans* Kasparyan, 2001

-. Mesopleuron without smooth area or with very small smooth area (its size about as long as spiracle of propodeum: Fig. 30D). Other character states various.

..... 5

5. Hind coxa and trochanter red. Hind femur red to blackish brown. Ratio of minimum length of gena to basal width of mandible: 0.2–0.35. Antenna with 31–41 flagellomeres. T I $1.4\text{--}1.66 \times$ as long as maximum width.

..... *Mesoleius aulicus* (Gravenhorst, 1829)

-. Hind coxa, trochanter, and femur black (Fig. 30A). Ratio of minimum length of gena to basal width of mandible: 0.35–0.45. Other character states various.

..... 6

6. Clypeus brown, slightly yellow at sides and lower margin. T I $1.14 \times$ as long as maximum width. Antenna with 36 flagellomeres. Small species, fore wing length 8.4 mm.

..... *Mesoleius alekhinovi* Kasparyan, 2000

-. Clypeus entirely yellow (Fig. 30B). T I $1.4\text{--}1.5 \times$ as long as maximum width. Antenna with 42 flagellomeres. Large species, fore wing length 10.1–11.0 mm.

..... *Mesoleius morishitai* sp. nov.

***Mesoleius morishitai* sp. nov.**

(SJN: Oo-ko-maru-himebachi)

(Figs. 30A–D, 39I, 40V)

Type series. **Holotype:** JAPAN, KPM-NK 84966, F, Aichi Pref., Toyohashi City, Imure-cho, Takayama, 6. V. 2020, S. Morishita leg. **Paratype:** JAPAN, NARO, F, Miyazaki Pref., Kirishima, Mt. Takachihonamine, 21. V. 1982, H. Takemoto leg.

Description. Female ($n = 2$). Body length 9.7–11.9 (HT: 9.7) mm, matt and covered with silver setae.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $2.2 \times$ as broad as high, sparsely punctate and polished, almost flat in lateral view, lower margin with a median concavity, strongly margined laterally (Fig. 40V). Face $1.75\text{--}1.85$ (HT: 1.75) \times as broad as high, finely punctate medially, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 39I. Occipital carina complete. Length of malar space $0.4 \times$ as long

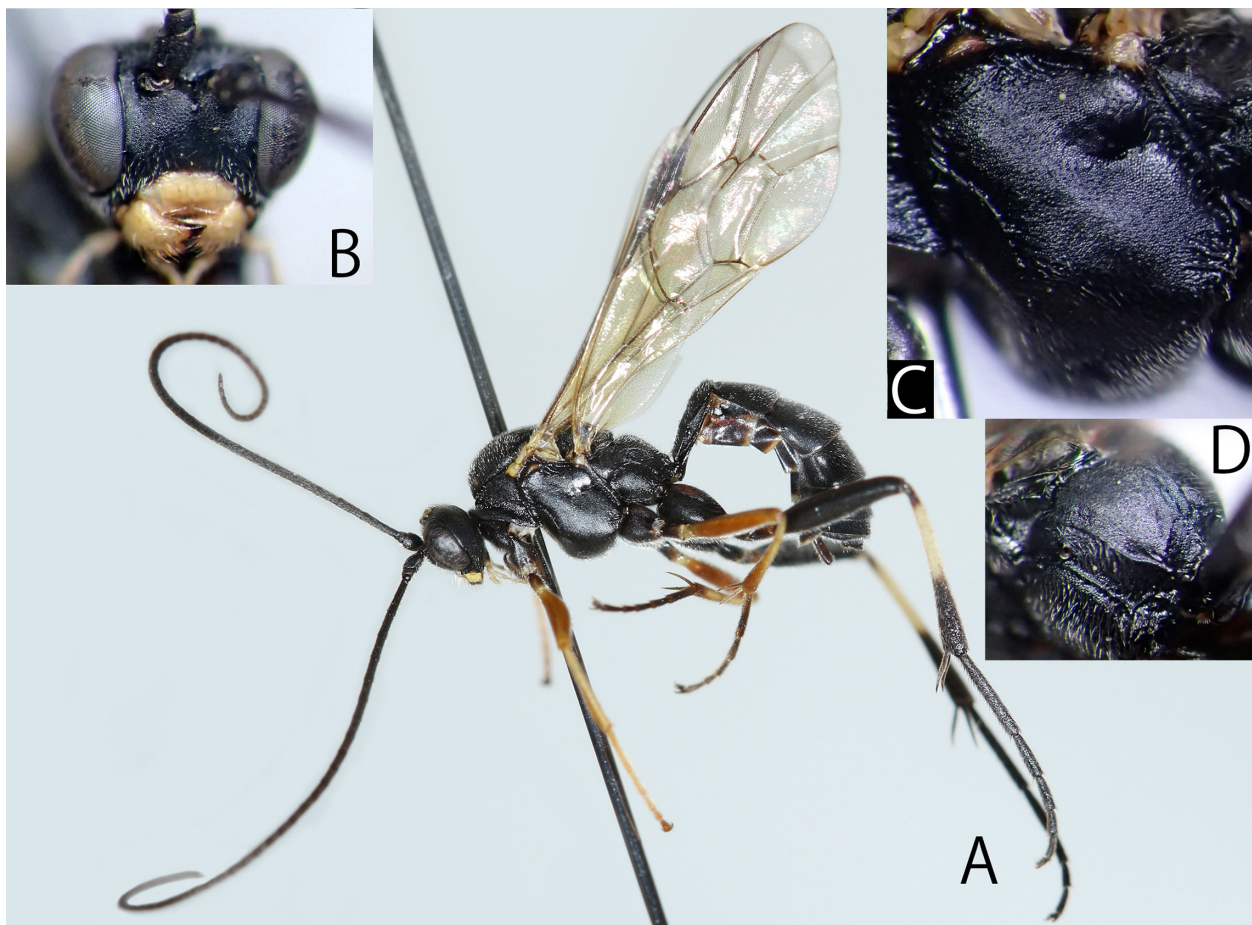


Fig. 30. *Mesoleius morishitai* sp. nov. (KPM-NK 84966, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron; D: propodeum, dorso-lateral view.

as basal width of mandible. Base of mandible slightly convex. POL 1.1–1.45 (HT: 1.1) \times as long as OD. OOL 1.25–1.45 (HT: 1.25) \times as long as OD. Antenna with 42 flagellomeres. FL I 5.0 \times as long as maximum depth, 1.55–1.6 (HT: 1.55) \times as long as FL II. Length of FL I plus FL II 1.1 \times as long as eye height.

Mesosoma. Epomia short. Mesoscutum with weak notaulus. Epicnemial carina present laterally and ventrally, its dorsal end situated near anterior margin of mesopleuron. Speculum almost entirely granulate except for very small (its size about as long as spiracle of propodeum) smooth area (Fig. 30C). Propodeum with pleural carina, lateral longitudinal carina, partly indistinct lateromedian longitudinal carina, and partly indistinct posterior transverse carina (Fig. 30D). Fore wing length 10.1–11.0 (HT: 10.1) mm. Areolet absent. Fore wing vein 1cu-a postfurcal to vein M&RS. Nervellus subvertical, intercepted posterior the middle. Tarsal claws simple. Hind femur 5.0–5.1 (HT: 5.0) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.2–4.3 (HT: 4.2): 2.0: 1.5: 0.95–1.0 (HT: 1.0): 0.8–0.9 (HT: 0.8).

Metasoma. T I 1.4–1.5 (HT: 1.4) \times as long as maximum width. T II 0.75–0.9 (HT: 0.75) \times as long as maximum width. Setae of subgenital plate directed backwards. Ovipositor sheath with short (shorter than half depth of ovipositor sheath) setae apically. Ovipositor sheath 0.2 \times as long as hind tibia.

Colouration (Figs. 30A–D). Body (excluding wings and legs) black. Clypeus, mandible except for teeth, palpi, postero-dorsal corner of pronotum, scutellum, postscutellum, tegula, and subtegular ridge yellow. Antero-lateral part of mesoscutum with a pair of small yellow markings. Posterior margins of metasomal sternites tinged with whitish yellow. Yellow areas of postscutellum and subtegular ridge sometimes obscured. Wings hyaline. Veins and pterostigma blackish brown except for yellow wing base. Fore and mid legs reddish yellow to reddish brown. Fore and mid coxae black. Fore and mid trochanters partly tinged with black. Hind leg black except for subbasal white band of tibia.

Male. Unknown.

Distribution. Japan (Honshu and Kyushu).

Bionomics. Unknown.

Etymology. The specific name is from Mr. Shunsuke Morishita, who is an ichneumonologist and collector of holotype.

Remarks. This species resembles *Mesolei. alekhinoi* in body colouration and sculpture of the mesopleuron, but can be distinguished by the entirely yellow clypeus (largely brown in *Mesolei. alekhinoi*), the T I 1.4–1.5 \times as long as maximum width (ca. 1.15 in *Mesolei. alekhinoi*), the antenna

with 42 flagellomeres (36 in *Mesolei. alekhinoi*), the fore wing length 10.1–11.0 mm (8.4 mm in *Mesolei. alekhinoi*).

Genus *Perispuda* Förster, 1869

Genarches Förster, 1869: 200. Type species: *Mesoleptus facialis* Gravenhorst, 1829. Designated by Perkins (1962).

Perispuda Förster, 1869: 205. Type species: *Mesoleptus facialis* Gravenhorst, 1829. Designated by Viereck (1914).

Zaplethis Förster, 1869: 205. Type species: *Mesoleptus facialis* Gravenhorst, 1807. Designated by Perkins (1962).

Perispudus Thomson, 1888: 1261. Emendation.

A single species, *Peris. angularis* (Uchida, 1952), has been recorded from Japan. In this study, I newly record *Peris. bibullata* Sheng, 1999, from Japan below. The Japanese specimens of this species are slightly different from the type series collected from China, thus I redescribe this species based on Japanese materials.

Key to Japanese species of *Perispuda*

1. Body including legs nearly entirely black.

..... *Perispuda angularis* (Uchida, 1952)

-. Metasomal tergites with conspicuous red area (Figs. 31A, E). Legs partly with yellow areas (Figs. 31A, E).

..... *Perispuda bibullata* Sheng, 1999

Perispuda bibullata Sheng, 1999

(SJN: Nagase-maru-himebachi)

(Figs. 31A–F, 39J, 40W)

Perispuda bibullata Sheng, 1999 in Sheng *et al.* (1999): 5.

Description based on Japanese specimens. Female ($n = 8$). Body length 15.0–17.0 mm, covered with punctures and silver setae.

Head 0.6 \times as long as wide in dorsal view, matt, densely and finely punctate. Clypeus 2.2–2.4 \times as broad as high, largely smooth, sparsely punctate dorsally, lower margin rounded (Fig. 40W). Face 1.6–1.8 \times as broad as high, weakly convex medially in lateral view. Frons with some punctures united into some shallow transverse grooves. Dorsal profile of gena as Fig. 39J. Occipital carina complete. Length of malar space 0.4 \times as long as basal width of mandible. Mandible smooth apically, longitudinally striate medially, densely punctate basally. POL 0.95–1.1 \times as long as OD. OOL 1.1–1.2 \times as long as



Fig. 31. *Perispuda bibullata* Sheng, 1999 (A–D: KPM-NK 84918, female; E, F: TMNH, male) — A, E: lateral habitus; B, F: head, frontal view; C: mesopleuron and metapleuron; D: areolet.

OD. Antenna with 44–45 flagellomeres. FL I $5.7 \times$ as long as maximum depth, $2.2\text{--}2.5 \times$ as long as FL II.

Mesosoma polished and densely punctate. Pronotum with some longitudinal striae along collar. Epomia absent. Mesoscutum with indistinct notaulus. Epicnemial carina present laterally and ventrally, its dorsal end situated slightly behind of anterior margin of mesopleuron. Speculum with a smooth area (Fig. 31C). Mesopleuron with a rather wide concavity below speculum. Propodeum punctate and rugulose, lateromedian longitudinal carina and lateral longitudinal carina largely obscured. Transverse carinae absent. Area above sockets of hind coxa strongly convex. Fore wing length 12.8–14.2 mm. Areolet present, petiolated, received vein 2m-cu at the outer angle (Fig. 31D). Fore wing vein 1cu-a postfurcal to vein M&RS. Nervellus subvertical, intercepted anterior the middle. Tarsal claws simple. Hind femur $4.9\text{--}5.8 \times$ as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.8–5.0: 2.0: 1.5–1.55: 0.9–0.95: 1.25.

Metasoma finely punctate and coriaceous. T I $2.5\text{--}3.0 \times$ as long as maximum width. T II $1.15\text{--}1.4 \times$ as long as maximum width. Ovipositor sheath $0.15\text{--}0.2 \times$ as long as hind tibia.

Colouration (Figs. 31A–D). Body (excluding wings and legs) black. Clypeus dark reddish brown to reddish brown. Mandible and ventral surface of antenna more or less tinged with dark reddish brown. Posterior margin of T II, T III, T IV, and membranous part of metasomal sternite reddish brown to red. Reddish part of T II sometimes enlarged. Wings hyaline. Veins and pterostigma blackish brown except for yellowish-brown wing base. Legs blackish brown to black. Apices of fore and mid femora, fore tibia, fore tarsus, and basal part of mid tibia yellowish brown.

Male ($n = 17$). Similar to female. Body length 14.5–16.0 mm. Clypeus $2.0\text{--}2.2 \times$ as broad as high. Length of malar space $0.25\text{--}0.35 \times$ as long as basal width of mandible. Mandible smooth apically, punctate medially and basally. POL $1.0\text{--}1.3 \times$ as long as OD. OOL $1.0\text{--}1.15 \times$ as long as OD. Antenna with 41–45 flagellomeres. FL I $2.0 \times$ as long as FL II. Fore wing length 11.6–13.0 mm. Face, clypeus, malar space, mandible except for teeth, palpi, and fore and mid coxae, trochanters, and trochantelli yellow (Figs. 31E, F). Hind tibia slightly paler than apical part (Fig. 31E). Yellowish brown part of fore and mid legs paler than female (Fig. 31E).

Material examined. JAPAN, KPM-NK 84912–84915, 4 M, Hokkaido, Tomakomai City, Mt. Tarumae-zan, 9. VIII. 2012, S. Fujie leg.; OMNH, M, ditto; KPM-NK 84916, F, Hokkaido, Otaru City, Kenashi-yama, 7. VII. 2014, A. Yamamoto leg.; KPM-NK 84917, M,

Tochigi Pref., Nasushiobara City, Takesan to Okunoin, 23. VI. 2009, E. Katayama leg.; KPM-NK 84918, F, Niigata Pref., Myoko City, Suginosawa, 23. VIII. 2014, M. Ito leg.; KPM-NK 84919, M, Niigata Pref., Myoko City, Suginosawa, Mt. Sasagamine, 29. VII. 2016, K. Watanabe leg.; KPM-NK 84920, M, Saitama Pref., Ogawa Town, Kuriyama, 17. VI. 1995, M. Uchida leg.; KPM-NK 84921, F, Yamanashi Pref., Narusawa Vil., Mt. Fuji, 11. IX. 1990, H. Suda leg.; KPM-NK 84922, F, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 8. VIII. 2010, K. Watanabe leg.; KPM-NK 84923, M, Kanagawa Pref., Fujisawa City, campus of Keio University, 9. V. 2018, T. Amano leg.; KPM-NK 84924, F, Kanagawa Pref., Kiyokawa Vil., Doudaira to Nishimine to Mt. Tanzawasan, 16. VII. 2005, M. Takakuwa leg.; KPM-NK 84925, F, Kanagawa Pref., Hakone Town, Mt. Komagatake, 11. VII. 2000, H. Nagase leg.; KPM-NK 84926, M, ditto, 17. VII. 2005, K. Watanabe leg.; KPM-NK 84911, F, Kanagawa Pref., Hakone Town, Yunohana, 17. VII. 2005, H. Nagase leg.; KPM-NK 84927, M, Kanagawa Pref., Hakone Town, Sengokuhara, Daigatake, 15. VI. 1997, I. Waki leg.; KPM-NK 84928, M, Kanagawa Pref., Hakone Town, Motohakone, 19. VI. 2018, K. Watanabe leg.; KPM-NK 84929, M, Kanagawa Pref., Yugawara Town, Yoshihama, Saisogenya, 6. VI. 2016, K. Watanabe leg.; KPM-NK 84930, M, Fukui Pref., Oono City, Arashi, 30. VIII. 1974, H. Kurokawa leg.; KPM-NK 84931, M, Fukui Pref., Oono City, Koike to Ropponhinoki, 23. IX. 1981, H. Kurokawa leg.; KPM-NK 84932, M, Fukui Pref., Tsuruga City, Kinome-toge, 9. VII. 1981, H. Kurokawa leg.; TMNH, M, Fukui Pref., Ikeda Town, Mt. Heko-san, 5. IX. 2019, S. Morishita leg.; KPM-NK 84933, F, Ehime Pref., Omogo Vil., Teppouishikawa, 13. VII. 1998, I. Kawashima leg.; KPM-NK 84934, M, Oita Pref., Mt. Yufu-dake, 15. VII. 2000, N. Yamamoto leg.

Distribution. Japan (Hokkaido, Honshu, and Kyushu) and China.

Bionomics. Unknown.

Remarks. This is the first record of this species from Japan. Facial length/width and number of flagellar segments are slightly different from the type series (Sheng *et al.*, 1999), while I conclude that these are intraspecific variations.

Genus *Protarchus* Förster, 1869

Protarchus Förster, 1869: 201. Type species: *Tryphon rufus* Gravenhorst, 1829 (= *Ichneumon testatorius* Thunberg, 1822). Designated by Viereck (1914).

Zacalles Förster, 1869: 204. Type species: *Zacalles magnus* Davis, 1897. Designated by Viereck (1914). *Protarchoides* Cushman, 1922: 25. *Protarchoides longipes* Cushman, 1902. Original designation.

Two species, *Pr. sorbi* (Ratzeburg, 1844) and *Pr. testatorius* (Thunberg, 1822), have been recorded from Japan. The body size of both species is relatively large compared to other genera of Japanese ctenopelmatines (usually more than 15 mm). In this study, I record *P. sorbi* from Honshu for the first time below.

Key to Japanese species of *Protarchus*
(modified from the key in Viitasaari (1979))

1. Metasomal tergites entirely black (Fig. 32A). Hind femur reddish brown (Fig. 32A). Hind tibia black except for its base sometimes tinged with red or yellow (Fig. 32A). Notaulus weak and shallow.

..... *Protarchus sorbi* (Ratzeburg, 1844)

-. Metasomal tergites with reddish brown markings. Hind femur and tibia reddish brown except for apical part of tibia more or less darkened. Notaulus strong and sharp.

..... *Protarchus testatorius* (Thunberg, 1822)

Protarchus sorbi (Ratzeburg, 1844)
(SJN: Oo-futoashi-maru-himebachi)
(Figs. 32A–E)

Tryphon sorbi Ratzeburg, 1844: 126.

Protarchoides longipes Cushman, 1922:

Psilosage longipes Ashmead, 1902 in Slosson (1902): 321.

Protarchoides mandibularis Cushman, 1924:

Description. See Viitasaari (1979).

Material examined. JAPAN: KPM-NK 84816, F, Nagano Pref., Kawakami Vil., Azusayama, 14. VI. 2015, K. Watanabe leg.

Distribution. Japan (Kunashiri Is. and Honshu); widely distributed in Western Palearctic and Nearctic regions.

Remarks. This is the second record of this species in Japan.

Tribe **Perilissini** Thomson, 1883

Genus ***Perilissus*** Förster, 1855

Perilissus Holmgren, 1855: 63. Type species: *Ichneumon filicornis* Gravenhorst, 1820 (= *I. variator* Müller, 1776). Monotypic.

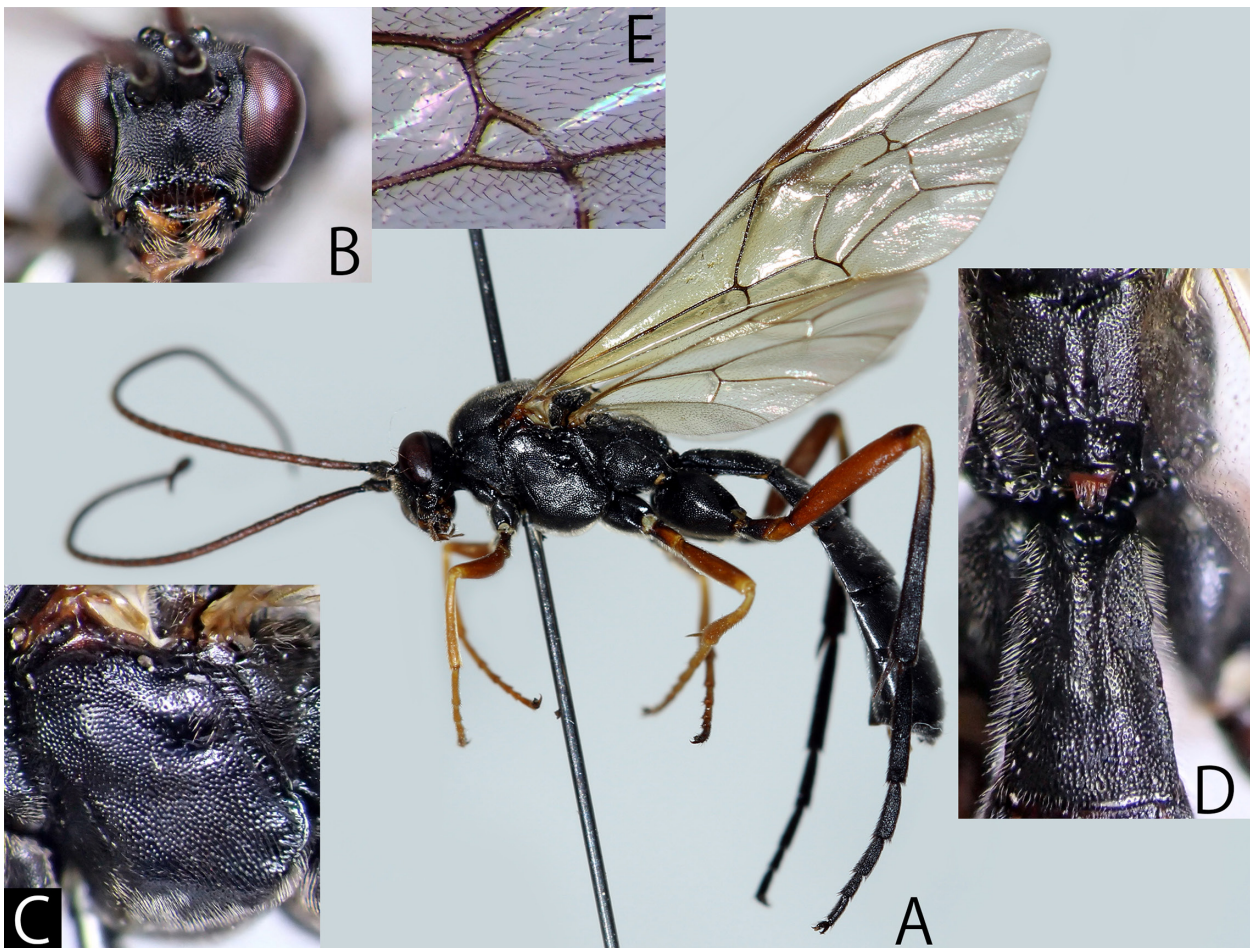


Fig. 32. *Protarchus sorbi* (Ratzeburg, 1844) (KPM-NK 84816, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron; D: propodeum and T I, dorsal view; E: areolet.

Spanotecnus Förster, 1869: 197. Type species: *Ichneumon filicornis* Gravenhorst, 1820 (= *I. variator* Müller, 1776). Designated by Viereck (1914).

Ichnaeops Förster, 1869: 197. Type species: *Perilissus lutescens* Holmgren, 1857. Designated by Perkins (1962).

Polyoncus Förster, 1869: 197. Type species: *Tryphon erythrocephalus* Gravenhorst, 1829. Designated by Viereck (1914).

Udenia Förster, 1869: 202. Type species: *Perilissus (Udenia) herrichii* Kriechbaumer, 1892 (= *Ichneumon rufoniger* Gravenhorst, 1820). Included by Kriechbaumer (1892).

Exacrodes Förster, 1869: 210. Type species: *Exacrodes populans* Morley, 1913 (= *Hypocryptus cingulator* Morley, 1913). Included by Morley (1913).

Daugna Seyrig, 1935: 29. Type species: *Daugna alluaudi* Seyrig, 1935 (= *Prionopoda testaceoides* Morley, 1926). Original designation.

Pseudochorus Rao, 1953: 195. Type species: *Pseudochorus kuriani* Rao, 1953 (= *Hypocryptus cingulator* Morley, 1913). Original designation.

Four species, *Peril. athaliae* Uchida, 1936, *Peril. geniculatus* (Uchida, 1928), *Peril. rufoniger* (Gravenhorst, 1820), and *Peril. variator* (Müller, 1776), have been recorded from Japan. In this study, I describe a new species below.

Key to Japanese species of *Perilissus*

(modified from the key in Kasparyan & Khalaïm (2007))

1. Body (including antenna and legs) entirely yellowish red except for black oceller area, Propodeal carinae well developed. Lower tooth of mandible slightly longer than upper tooth.

..... *Perilissus geniculatus* (Uchida, 1928)
-. Body at least with large black areas (Fig. 33A). Other characters various.

..... 2
2. Coxae black. Clypeus black. T II to T IV of female reddish brown. T III of male usually more or less tinged with reddish brown. Propodeum with a median section of posterior transverse carina (other carinae absent).

..... *Perilissus rufoniger* (Gravenhorst, 1820)
-. Fore and mid coxae reddish brown to yellowish brown (Fig. 33A). Clypeus sometimes with yellow area(s) (Fig. 33B). Propodeum carinae well developed (Fig. 41D).

..... 3
3. Metasomal tergites without a red area (Fig. 33A). Mesoscutum and T I dull, covered with microsculpture. Ocelli large (Fig. 39K); OOL 1.2–1.4

× as long as POL.

..... *Perilissus autumnalis* **sp. nov.**
-. Metasomal tergites with a conspicuous red area. Mesoscutum and T I polished, its microsculpture weak. Ocelli small; OOL more than 2.0 × as long as POL.

..... 4
4. Clypeus yellow. T I 2.5–3.0 × as long as maximum width. Hind tibia entirely reddish brown.

..... *Perilissus variator* (Müller, 1776)
-. Clypeus black. T I 2.0 × as long as maximum width. Hind tibia reddish brown basally and blackish brown apically.

..... *Perilissus athaliae* Uchida, 1936

Perilissus autumnalis **sp. nov.**

(SJN: Akino-maru-himebachi)

(Figs. 33A–D, 39K, 40X, 41B, D)

Type series. Holotype: JAPAN, KPM-NK 91241, F, Aichi Pref., Toyohashi City, Suse-cho, Kanbata, 23. X. 2018, S. Morishita leg. **Paratypes:** JAPAN, TMNH, F, Aichi Pref., Toyohashi City, Ishimaki-cho, Ege, 14. X. 2018, S. Morishita leg.; KPMNK 91242, F, Toyama Pref., Toyama City, Arimine, Jurodani, 25. VIII. – 1. IX. 2009, M. Watanabe *et al.* leg. (MsT); KPM-NK 91243, F, Toyama Pref., Toyama City, Nanto City, Togamura to Kamimomose, 25. VIII. – 1. IX. 2009, M. Watanabe *et al.* leg. (MsT); KPM-NK 91244, F, ditto, 15–29. IX. 2009; KPM-NK 91245, F, Toyama Pref., Toyama City, Higashikuromaki, Ueno, 20. VI. 2008, T. Yamauchi leg.; KPM-NK 91246, M, Kanagawa Pref., Fujisawa City, Campus of Keio University, 13. VI. 2019, T. Amano leg.; KPM-NK 91247, M, Kanagawa Pref., Odawara City, Hayakawa, Mt. Ishigaki-yama, 21. IX. 2014, K. Watanabe leg.

Description. Female ($n = 6$). Body length 7.0–7.3 (HT: 7.2) mm, matt and covered with silver setae.

Head 0.65 × as long as wide in dorsal view. Clypeus 2.3–2.7 (HT: 2.7) × as broad as high, sparsely punctate, convex in lateral view, lower margin subtruncate (Fig. 40X). Face 1.8–1.9 (HT: 1.8) × as broad as high, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 39K. Occipital carina complete. Length of malar space 0.5–0.7 (HT: 0.7) × as long as basal width of mandible. Base of mandible flat (Fig. 41B). Lower tooth of mandible longer than upper tooth (Fig. 41B). Ocelli large (Fig. 39K). POL 0.7–1.0 (HT: 1.6) × as long as OD. OOL 1.2–1.4 (HT: 1.4) × as long as OD. Antenna with 32–34 (HT: 34) flagellomeres. FL I 3.35 × as long as maximum depth, 1.1 × as long as FL II.

Mesosoma. Epomia short. Mesoscutum without notaulus. Epicnemial carina present laterally and ventrally,

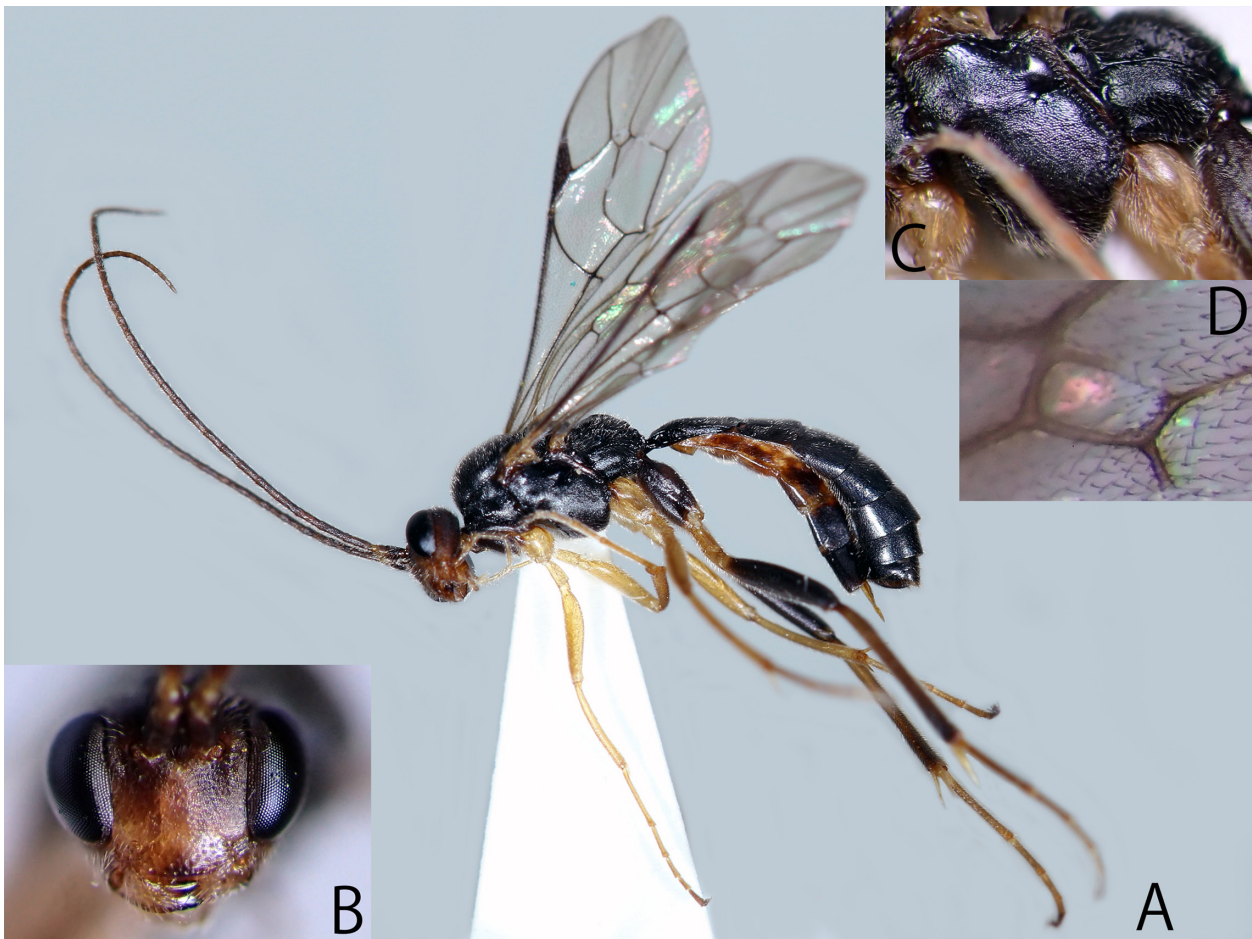


Fig. 33. *Perilissus autumnalis* sp. nov. (KPM-NK 91241, holotype, female) — A: lateral habitus; B: head, frontal view; C: mesopleuron and metapleuron; D: areolet.

its dorsal end situated slightly behind of anterior margin of mesopleuron. Speculum with small smooth area (Fig. 33C). Propodeum with complete carinae. Lateromedian longitudinal carina sometimes partly indistinct (Fig. 41D). Area superomedia longer than wide, received lateral section of anterior transverse carina anterior to middle (Fig. 41D). Fore wing length 6.0–6.6 (HT: 6.3) mm. Areolet present, shortly petiolated, received vein 2m-cu slightly apically to the middle (Fig. 33D). Fore wing vein 1cu-a interstitial to vein M&RS. Nervellus subvertical, intercepted at or slightly anterior the middle. Tarsal claws pectinate. Hind femur 4.7–4.8 (HT: 4.8) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.1–4.2 (HT: 4.1): 2.0: 1.5: 0.9–1.0 (HT: 0.9): 0.9–1.0 (HT: 0.9).

Metasoma. T I 1.6–1.8 (HT: 1.6) \times as long as maximum width. T II 0.7–0.85 (HT: 0.7) \times as long as maximum width. Ovipositor sheath 0.25 \times as long as hind tibia.

Colouration (Figs. 33A–D). Body (excluding wings and legs) blackish brown to black. Face, malar space, clypeus, and pedicel tinged with yellowish brown to brown. Palpi, mandible except for teeth, tegula, and membranous part of metasomal sternites yellowish brown to brown. Wings hyaline. Veins and pterostigma blackish brown except for

yellowish-brown wing base. Fore and mid legs yellowish brown. Hind leg blackish brown to black except for trochanter, trochantellus, basal part of tibia, and base of each tarsal segment more or less tinged with yellowish brown.

Male ($n = 2$). Similar to female. Body length usually slightly shorter than female (minimum specimen: 6.0 mm). Clypeus 2.1 \times as broad as high. OOL 1.5 \times as long as OD. Antenna with 31 flagellomeres. FL I 2.5–2.9 \times as long as maximum depth. T I 1.9 \times as long as maximum width. Hind coxa yellowish brown.

Distribution. Japan (Honshu).

Bionomics. Unknown.

Etymology. The specific name is from Latin “*autumnalis*” (autumn). Some adults of this species collected in Autumn, which is rather rare case in Japanese ctenopelmatus.

Remarks. This species resembles *Peril. sericeus* (Gravenhorst, 1829) in the body colouration but can be distinguished by the yellowish brown to brown face (black in *Peril. sericeus*), the yellowish brown to brown tegula (whitish yellow in *Peril. sericeus*), and the blackish brown to black hind coxa and femur (sometimes yellowish brown in *Peril. sericeus*).

Tribe **Pionini** Smith & Shenefelt, 1955

Genus ***Lethades*** Davis, 1897

Lethades Davis, 1897: 204. Type species: *Adelognathuis texanus* Ashmead, 1890. Monotypic.

This is the first record of this genus from Japan. In this study, I describe a new species below.

***Lethades kanagawensis* sp. nov.**

(SJN: Kanagawa-hirata-maru-himebachi)

(Figs. 34A–E, 39L, 40Y, 41I)

Type series. Holotype: JAPAN, KPM-NK 81378, F, Kanagawa Pref., Hadano City, Mt. Koubou-yama, 15. IV. 2013, K. Watanabe leg. **Paratypes:** JAPAN, KPM-NK 84894, F, Tokyo, Akiruno City, Ninomiya, 3. V. 2010, K. Watanabe leg.; KPM-NK 84895, M, Kanagawa Pref., Hadano City, Mt. Koubou-yama, 18. IV. 2010, K. Watanabe leg.; KPM-NK 84896, F, ditto, 18. IV. 2010; KPM-NK 84897, F, Kanagawa Pref., Hiratsuka City, Mt. Komayama to Shonandaira, 21. IV. 2007, K. Watanabe leg.; KPM-NK 84898, 84899, 2 M, Kanagawa Pref., Aikawa Town, Nakatsu, 11. IV. 2014, K. Watanabe leg.; KPM-NK 84900, F, Kanagawa Pref., Atsugi City, Funako, 14. IV. 2007, K. Watanabe leg.; KPM-NK 84901, M, Kanagawa Pref., Atsugi City, Sanda, 26. IV. 2008, H. Katahira leg.; KPM-NK 84902, M, Kanagawa Pref., Atsugi City, Nakaogino, 20. IV. 2008, H. Katahira leg.; KPM-NK 84903, 84904, 2 F, ditto, 26. IV. 2008, M. Gunji leg.

Description. Female ($n = 7$). Body length 4.75–5.8 (HT: 5.7) mm, matt and covered with silver setae.

Head $0.6 \times$ as long as wide in dorsal view. Clypeus $3.0 \times$ as broad as high, sparsely punctate, polished, lower margin rounded (Fig. 40Y). Face $1.75\text{--}2.0$ (HT: 2.0) \times as broad as high, slightly convex medially in lateral view. Dorsal profile of gena as Fig. 39L. Occipital carina complete. Length of malar space $0.4\text{--}0.45$ (HT: 0.45) \times as long as basal width of mandible. Base of mandible flat. POL $1.5 \times$ as long as OD. OOL $1.9\text{--}2.0$ (HT: 2.0) \times as long as OD. Antenna with 31–34 (HT: 34) flagellomeres. FL I $3.3 \times$ as long as maximum depth, $1.2 \times$ as long as FL II.

Mesosoma densely punctate. Epomia absent. Mesoscutum with notaulus, its posterior end reaching the middle of mesoscutum. Epicnemial carina present laterally and ventrally, its dorsal end situated slightly behind of anterior margin of mesopleuron. Speculum with smooth area. Mesopleuron largely coriaceous around speculum. Propodeum with all carinae except for anterior transverse carina sometimes partly obscured or absent. Fore wing

length 4.2–5.0 (HT: 4.8) mm. Areolet present, shortly petiolated, received vein 2m-cu slightly based of the outer angle (Fig. 34C). Fore wing vein 1cu-a postfurcal to vein M&RS. Nervellus inclivous, intercepted posterior the middle. Tarsal claws simple. Hind femur 4.25–4.4 (HT: 4.25) \times as long as maximum depth in lateral view. Ratio of length of hind first to fifth tarsomeres 4.8–5.0 (HT: 4.8): 2.0: 1.6: 0.9–1.0 (HT: 1.0): 1.1–1.2 (HT: 1.1). Hind TS III distinctly longer than hind TS V (Fig. 41I).

Metasoma. T I $1.2\text{--}1.3$ (HT: 1.2) \times as long as maximum width, densely and finely punctate. T II $0.6\text{--}0.65$ (HT: 0.63) \times as long as maximum width, largely densely and finely punctate. Ovipositor sheath $0.25\text{--}0.3$ (HT: 0.25) \times as long as hind tibia.

Colouration (Figs. 34A–C). Body (excluding wings and legs) black. Mandible except for teeth, ventral surfaces of scape and pedicel, palpi, postero-dorsal corner of pronotum, and tegula yellow. Lower margin of clypeus and ventral surface of flagellum more or less tinged with reddish brown. T II to T IV and ovipositor sheath red to reddish brown. Wings hyaline. Veins and pterostigma blackish brown except for yellow wing base. Legs reddish brown. Trochanter and trochantellus yellow. Apices of hind tibia and hind femur blackish brown. Hind tarsus largely tinged with blackish brown.

Male ($n = 5$). Similar to female. POL $1.5\text{--}1.8 \times$ as long as OD. Length of malar space $0.6 \times$ as long as basal width of mandible. FL I $2.85 \times$ as long as maximum depth, $1.25\text{--}1.3 \times$ as long as FL II. Hind femur $4.3\text{--}4.6 \times$ as long as maximum depth in lateral view. Ratio of length of hind first and second tarsomeres 4.6: 2.0. T II $0.7\text{--}0.8 \times$ as long as maximum width. Face, clypeus, malar space, and subtegular ridge yellow (Figs. 34D, E). Fore and mid legs largely yellowish brown (Fig. 34D). Red area of metasomal tergites sometimes partly reduced (especially T II and T IV).

Distribution. Japan (Honshu).

Bionomics. Host is unknown. Adults usually collected from grassland.

Etymology. The specific name is from Kanagawa Prefecture.

Remarks. This species resembles *Let. nigricoxis* Sheng & Sun, 2013 in the following combination of characters: flagellum with more than 30 segments; hind coxa black; ovipositor sheath shorter than hind TS I, but can be distinguished by the following combination of characters: T IV entirely red (basal 0.3 red in *Let. nigricoxis*); lateral side of T V red (not red in *Let. nigricoxis*); hind TS III distinctly longer than hind TS V (same length in *Let. nigricoxis*); face yellow in male (black in male of *Let. nigricoxis*).

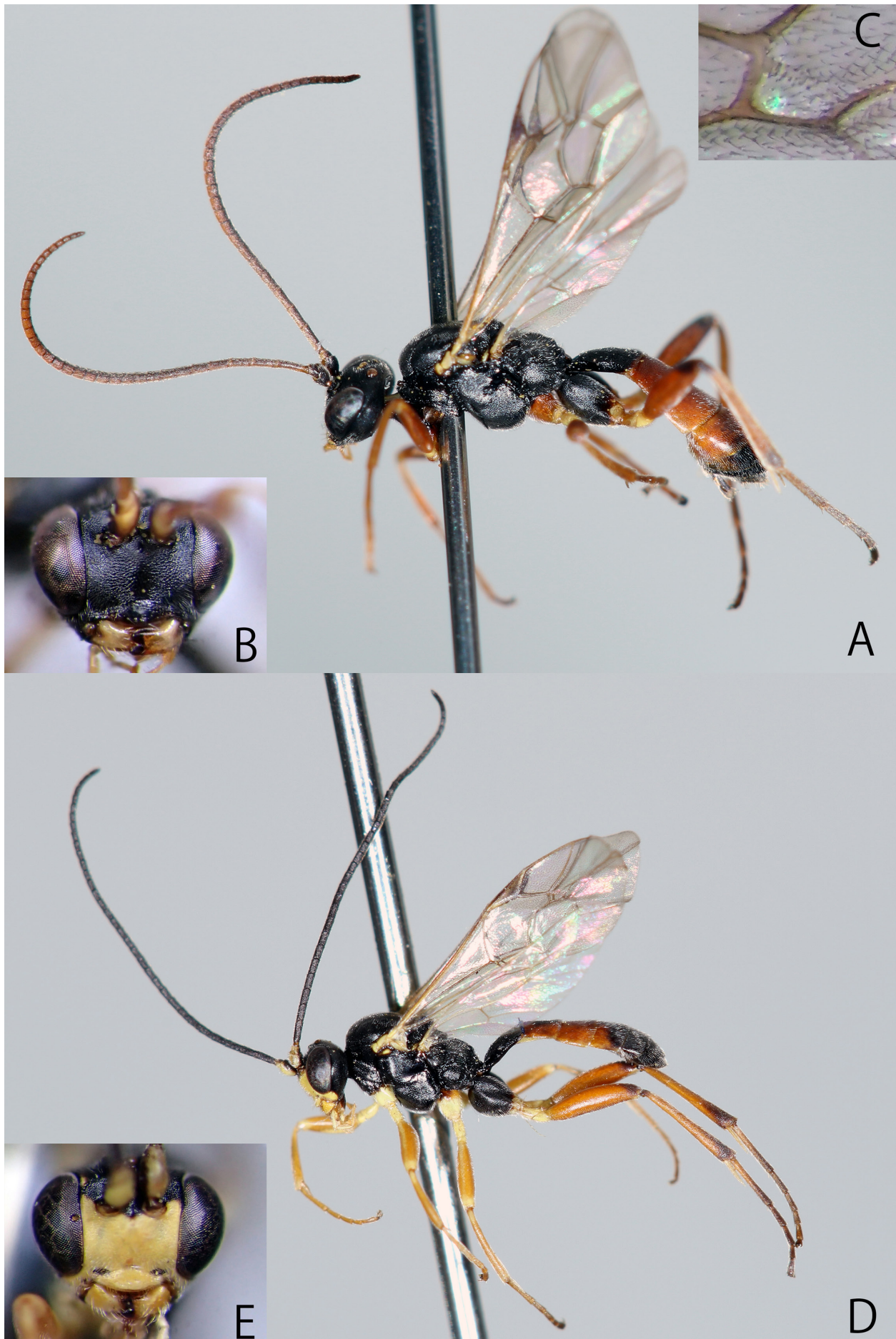


Fig. 34. *Lethades kanagawensis* **sp. nov.** (A–C: KPM-NK 81378, holotype, female; D, E: KPM-NK 84899, paratype, male) — A, D: lateral habitus; B, E: head, frontal view; C: areolet.

Genus *Sympherta* Förster, 1869

- Sympherta* Förster, 1869: 196. Type species: *Tryphon burrus* Cresson, 1868. Designated by Viereck (1914).
Stiphrosomus Förster, 1869: 198. Type species: *Mesoleptus fuscicornis* Gravenhorst, 1829. Designated by Viereck (1914). Name preoccupied.
Trapezocora Förster, 1869: 208. Type species: *Mesoleptus antilope* Gravenhorst, 1829. Designated by Perkins (1962).
Atrestes Förster, 1869: 209. Type species: *Catoglyptus (Stiphrosomus) sulcatus* Thomson, 1894. Designated by Perkins (1962).
Campogenes Förster, 1869: 209. Type species: *Mesoleptus antilope* Gravenhorst, 1829. Designated by Perkins (1962).
Provancherella Dalla Torre, 1901: 305. Type species: *Baryceros rhopalocerus* Provancher, 1875 (= *Tryphon burrus* Cresson, 1868). Monotypic.
Eustiphrosomus Hincks, 1944: 34. New name for *Stiphrosomus*.

Seven taxa, *S. antilope antilope* (Gravenhorst, 1829), *S. antilope sibirica* Hinz, 1991, *S. facialis* Hinz, 1991, *S. kasparyani* Hinz, 1991, *S. nigritor* Hinz, 1991, *S. sulcata* (Thomson, 1894), *S. sulcatoides* Hinz, 1991, and *S. townesi* Hinz, 1991, have been recorded from Japan. Hinz (1991) reviewed the Palearctic species of this genus, while five taxa, *S. antilope sibirica*, *S. kasparyani*, *S. sulcata*, *S. sulcatoides*, and *S. townesi*, were recorded from Japan without locality data (but the voucher specimens with data labels). In this study, I record these species, except for *S. sulcata* and *S. sulcatoides*, from several new localities in Japan.

Key to Japanese species of *Sympherta*

(modified from the key in Hinz (1991))

1. Female. 2
- . Male. 9
2. Flagellum without a white band (Figs. 36A, 37A). 3
- . Flagellum with a conspicuous white band (Fig. 35A). 5
3. Dorsal end of epicnemial carina not reaching anterior margin of mesopleuron. Gena in dorsal view abruptly narrowed toward posteriorly. Metasomal tergites with a red area, but black in posterior segments. *Sympherta kasparyani* Hinz, 1991

- . Epicnemial carina well developed, dorsal end reaching anterior margin of mesopleuron. Other character states various.

- 4
 4. Metasomal tergites black (Fig. 37A), sometimes narrowly and slightly tinged with reddish brown. Hind tibia black (Fig. 37A).

..... *Sympherta townesi* Hinz, 1991
 -. Metasomal tergites with a distinct red area. Hind tibia largely yellowish brown to reddish brown.

..... *Sympherta facialis* (Héllen, 1941)
 5. Hind coxa reddish brown to red (Fig. 35A). Hind femur usually largely reddish brown to red. Fore and mid coxae usually reddish brown to red (Fig. 35A). Postero-dorsal corner of pronotum and tegula sometimes tinged with brown. Scutellum sparsely punctate, interspace of punctures usually larger than diameter of puncture.

..... *Sympherta antilope* (Gravenhorst, 1829) 6
 -. All coxae blackish brown to black. Hind femur sometimes entirely black. Postero-dorsal corner of pronotum and tegula blackish brown to black. Scutellum variously punctate.

..... 7
 6. Fore coxa reddish brown to red.

..... *Sympherta antilope antilope* (Gravenhorst, 1829)
 -. Fore coxa blackish brown to black (Fig. 35A).

..... *Sympherta antilope sibiricus* Hinz, 1991
 7. Face and mesoscutum covered with reticulate surface and strongly polished. Scutellum sparsely punctate just behind of scuto-scutellar groove. Mesopleuron with a distinct concavity just behind of dorsal end of epicnemial carina. Face densely punctate. Mesopleuron without or with weak longitudinal striae between subtegular ridge and speculum. T II and T III always reddish brown. Apex of T I and base of T IV sometimes tinged with reddish brown. Hind femur black, its basal part sometimes tinged with reddish brown.

..... *Sympherta sulcatoides* Hinz, 1991
 -. Face and mesoscutum covered with dense reticulate or granulate surface and partly matt. Scutellum sometimes densely punctate or transversely rugulose just behind of scuto-scutellar groove. Mesopleuron with or without a weak concavity just behind of dorsal end of epicnemial carina. Face variously punctate, but the outline of punctures somewhat indistinct. Mesopleuron with longitudinal striae between subtegular ridge and speculum. Colouration of metasomal tergites and hind femur various.

..... 8
 8. Metasomal tergites entirely black or red on posterior part of T II and T III. Scutellum densely punctate with coarse rugae, interspace of punctures just behind of scuto-

scutellar groove narrower than diameter of puncture. Red markings of frons slightly present or absent.

..... *Sympherta nigritor* Hinz, 1991

-. Metasomal tergites red on T II (sometimes only posteriorly) and T III. Apex of T I sometimes tinged with red. Scutellum sparsely punctate. Red markings of frons large and distinct.

..... *Sympherta sulcata* (Thomson, 1894)
9(1). Occiput granulate and matt just behind of stemmaticum.

..... 10
-. Occiput punctate and polished just behind of stemmaticum.

..... 12
10. Fore and mid coxae each with yellow spot(s). Postero-dorsal corner of pronotum yellow. T II and T III usually with reddish brown area(s). Hind femur usually reddish brown, but sometimes darkened.

..... *Sympherta sulcata* (Thomson, 1894)
-. Fore and mid coxae without yellow spot(s). Postero-dorsal corner of pronotum black. Colouration of metasomal tergites and hind femur various.

..... 11
11*. Metasomal tergite with red areas.

..... *Sympherta antilope antilope* (Gravenhorst, 1829)

-. Metasomal tergite without red area.

..... *Sympherta nigritor* Hinz, 1991
12. Dorsal end of epicnemial carina reaching anterior margin of mesopleuron. Areolet present.

..... 13
-. Dorsal end of epicnemial carina not reaching anterior margin of mesopleuron. Areolet absent.

..... 14
13. Metasomal tergites black.

..... *Sympherta townesi* Hinz, 1991
-. Metasomal tergites black with red area(s) medially.

..... *Sympherta facialis* (Héllen, 1941)
14. Face and gena black. Vertex and dorsal part of gena strongly punctate. T I slender. Gena in dorsal view abruptly narrowed toward posteriorly.

..... *Sympherta kasparyani* Hinz, 1991
-. Face and gena yellow. Vertex and dorsal part of gena weakly punctate. T I robust. Gena in dorsal view weakly narrowed toward posteriorly.

..... *Sympherta sulcatoides* Hinz, 1991

* The male of *S. antilope sibiricus* is unknown. The difference between *S. antilope* and *S. nigritor* is sometimes overlaps. Further studies are therefore needed.

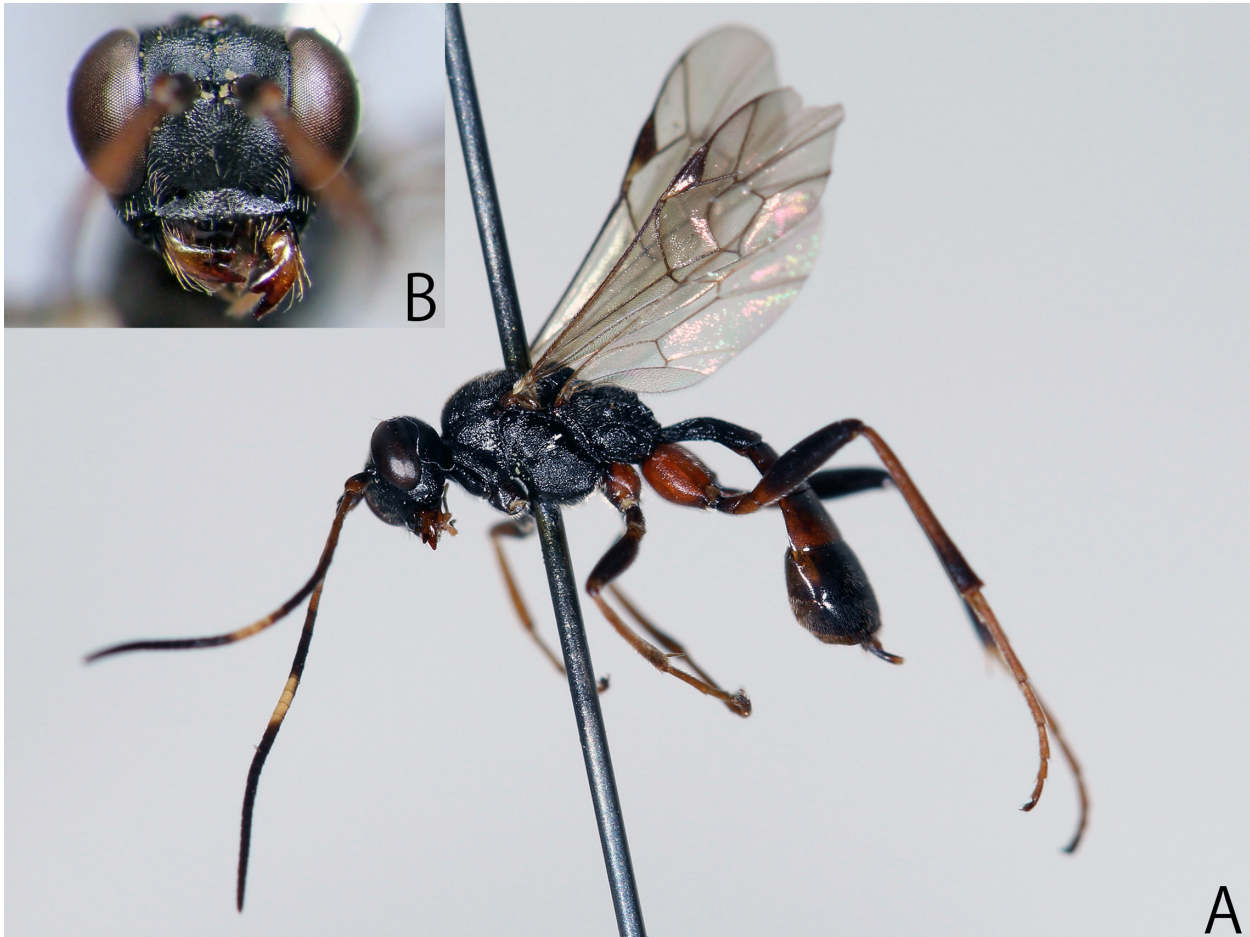


Fig. 35. *Sympherta antilope sibirica* Hinz, 1991 (KPM-NK 84762, female) — A: lateral habitus; B: head, frontal view.

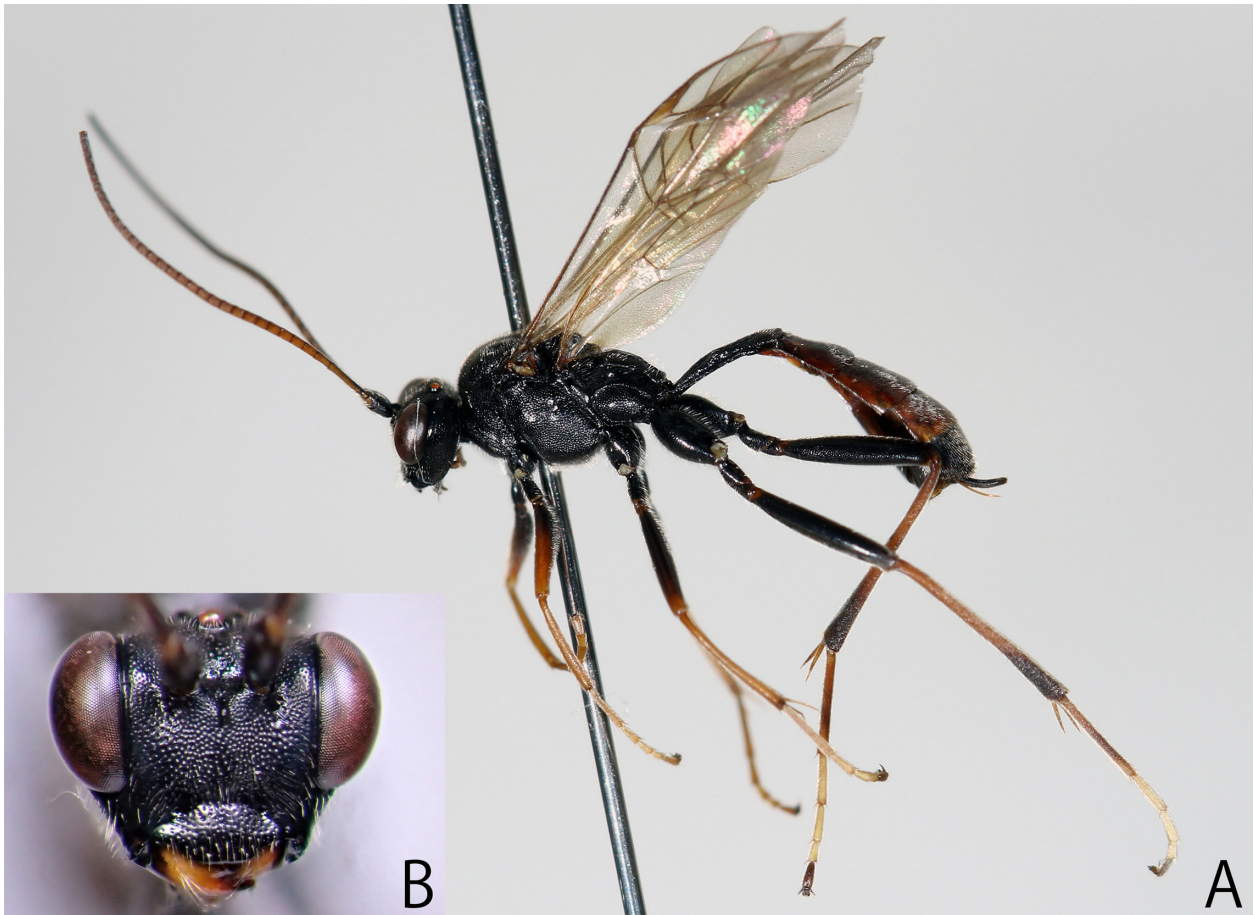


Fig. 36. *Sympherta kasparyani* Hinz, 1991 (KPM-NK 84783, female) — A: lateral habitus; B: head, frontal view.



Fig. 37. *Sympherta townesi* Hinz, 1991 (KPM-NK 84766, female) — A: lateral habitus; B: head, frontal view.

Sympherta antilope sibirica Hinz, 1991
(SJN: Nippon-hirata-maru-himebachi)
(Figs. 35A, B)

Sympherta antilope sibirica Hinz, 1991: 33.

Description. See Hinz (1991).

Specimen examined. JAPAN: KPM-NK 84762, F, Tochigi Pref., Kuroiso Town, Morura, 28. V. 2001, E. Katayama leg.; KPM-NK 84763, F, Tochigi Pref., Ohtawara City, Korobane-johshi, 5. V. 2010, E. Katayama leg.; KPM-NK 84764, F, Yamanashi Pref., Nirasaki City, Houougoya,

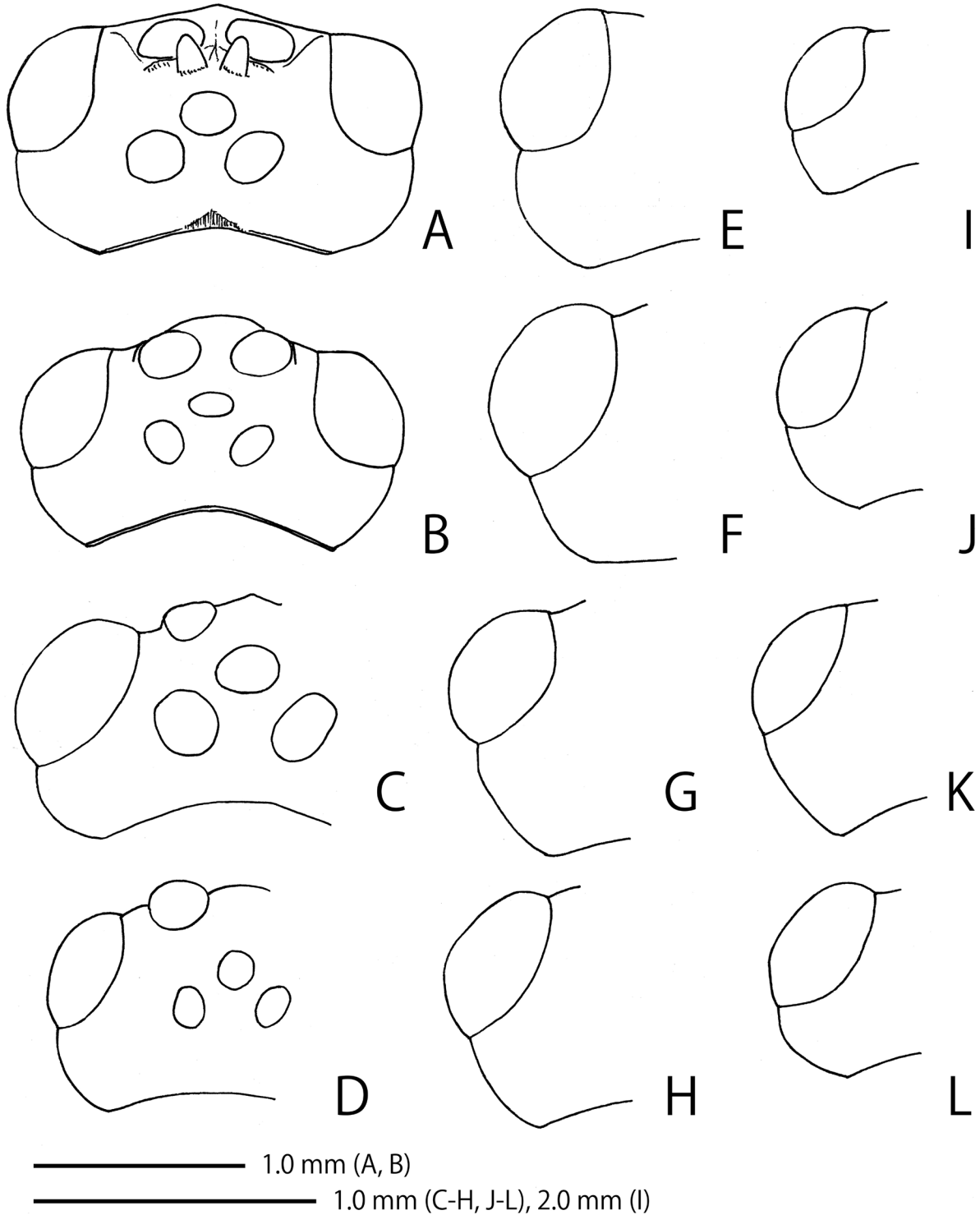


Fig. 38. Head, dorsal view, females — A: *Notopygus bicornis* sp. nov. (KPM-NK 81355, holotype); B: *N. japonicus* sp. nov. (KPM-NK 84831, holotype); C: *Anisotacrus nocturnus* sp. nov. (KPM-NK 84832, holotype); D: *An. pulchellus* sp. nov. (KPM-NK 84834, holotype); E: *Euryproctus flavidens* sp. nov. (KPM-NK 84842); F: *Mesoleptidea amanoi* sp. nov. (KPM-NK 84857, holotype); G: *Mesolep. japonica* sp. nov. (KPM-NK 84857, holotype); H: *Mesolep. mesorufa* sp. nov. (KPM-NK 84859, holotype); I: *Alcochera nigra* sp. nov. (KPM-NK 91248, holotype); J: *Campodorus albimarginalis* sp. nov. (KPM-NK 84956, holotype); K: *Ca. japonicus* sp. nov. (KPM-NK 84961, holotype); L: *Ca. rufidorsalis* sp. nov. (KPM-NK 84958, holotype).

28–29. VII. 2012, T. Nakayama leg. RUSSIA: ZISP, F (holotype), Khabarovsk, 12. VI. 1983, Kasparyan leg.

Distribution. Japan (Honshu); Far East Russia.

Remarks. This is the first record of this subspecies from Honshu. This subspecies differs from *S. antilope antilope* by the blackish brown or black fore coxa (reddish brown to red in *S. antilope antilope*), but this character state is not clearly separable, and their distributions are overlap. This subspecies may therefore be synonymous with *Sympherta antilope antilope* (Gravenhorst, 1829).

Sympherta kasparyani Hinz, 1991

(SJN: Kasparyan-hirata-maru-himebachi)

(Figs. 36A, B)

Sympherta kasparyani Hinz, 1991: 37.

Description. See Hinz (1991).

Specimen examined. JAPAN: KPM-NK 84773, M, Hokkaido, Chitose City, Bibi, 14. VI. 2006, K. Watanabe leg.; KPM-NK 84774, F, Hokkaido, Tomakomai Town, Utonai-ko, 18. VI. 2006, K. Watanabe leg.; KPM-NK 84775, 84776, F & M, Hokkaido, Tomakomai Town, Uenae, 19. VI. 2006, K. Watanabe leg.; KPM-NK 84777–84779, 3 F, Hokkaido, Horokanai Town, Uryu, 16. VII. 2012, M. Ito leg.; KPM-NK 84780, M, ditto, 17. VII. 2012; KPM-NK 84781, F, Niigata Pref., Myokou City, Suginosawa, Mt. Sasagamine, 9. VII. 2013, S. Shimizu leg.; KPM-NK 84782, F, Nagano Pref., Kiso Town,

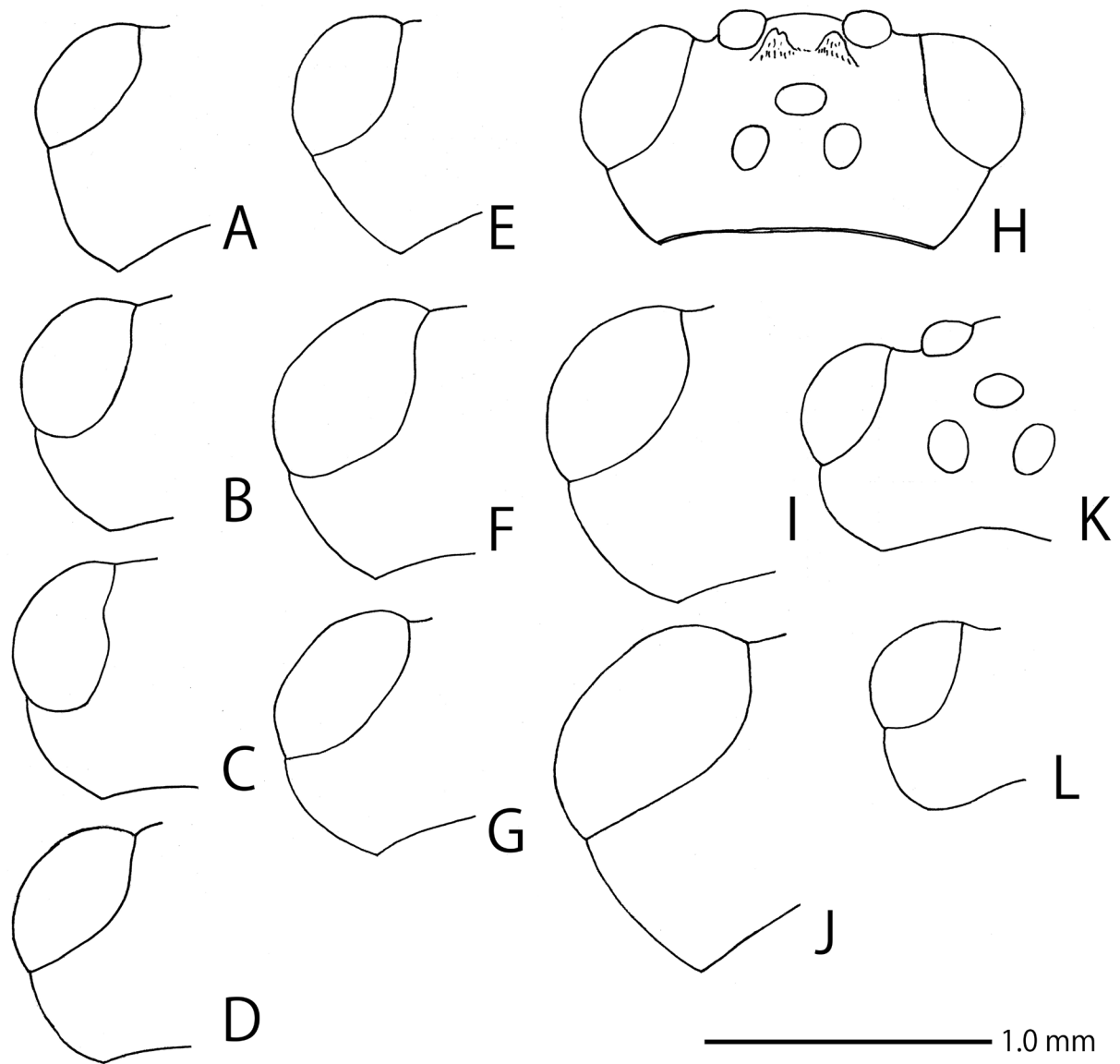


Fig. 39. Head, dorsal view, females — A: *Hyperbatus ariminensis* sp. nov. (KPM-NK 84935, holotype); B: *H. borealis* sp. nov. (KPM-NK 84936, holotype); C: *H. montanus* sp. nov. (KPM-NK 84937, holotype); D: *H. nigrifemur* sp. nov. (KPM-NK 84958, holotype); E: *Lagarotis nigra* sp. nov. (KPM-NK 91258, holotype); F: *Lamachus albopictus* Cushman, 1937 (KPM-NK 84940); G: *Lamachus montanus* sp. nov. (KPM-NK 84944, holotype); H: *Leipula pulchra* sp. nov. (KPM-NK 84906, paratype); I: *Mesoleius morishitai* sp. nov. (KPM-NK 84966, holotype); J: *Perispuda bibullata* Sheng, 1999 (KPM-NK 84911); K: *Perilissus autumnalis* sp. nov. (KPM-NK 91241, holotype); L: *Lethades kanagawensis* sp. nov. (KPM-NK 81378, holotype).

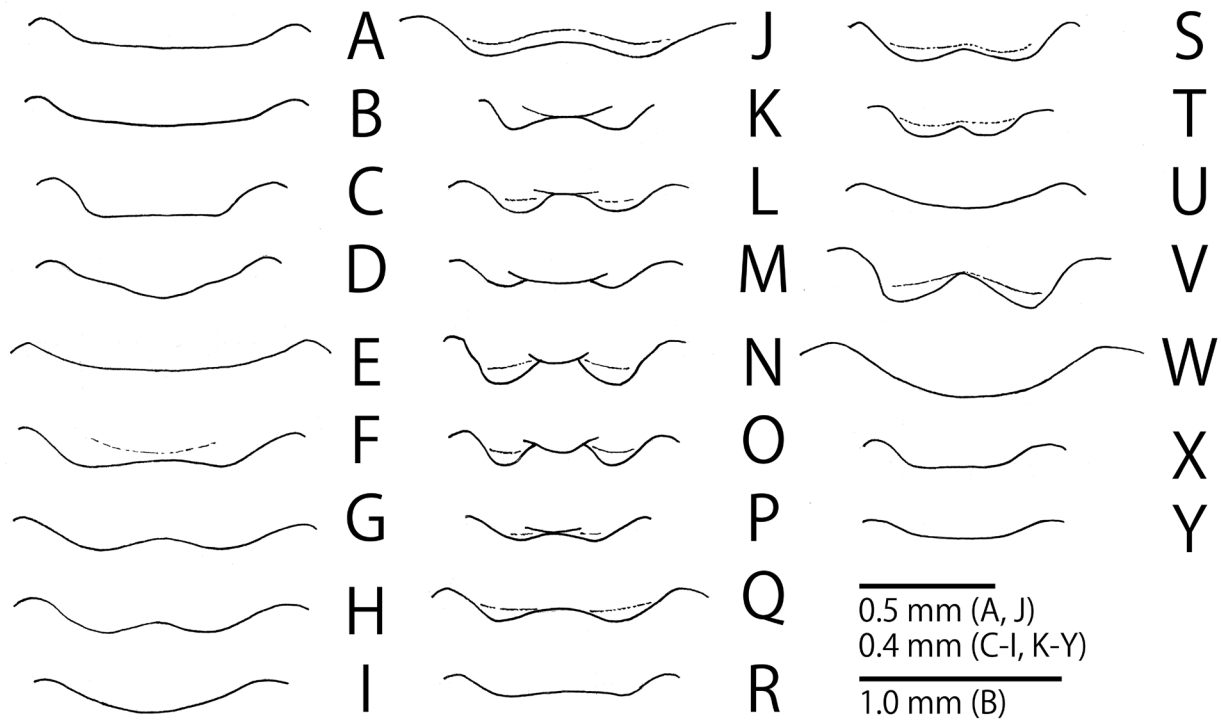


Fig. 40. Lower margin of clypeus, frontal view, females — A: *Notopygus bicornis* sp. nov. (KPM-NK 81355, holotype); B: *N. japonicus* sp. nov. (KPM-NK 84831, holotype); C: *Anisotacrus nocturnus* sp. nov. (KPM-NK 84832, holotype); D: *An. pulchellus* sp. nov. (KPM-NK 84834, holotype); E: *Euryproctus flavidens* sp. nov. (KPM-NK 84842); F: *Mesoleptidea amanoi* sp. nov. (KPM-NK 84857, holotype); G: *Mesolep. japonica* sp. nov. (KPM-NK 84857, holotype); H: *Mesolep. maculata* Sheng, Sun & Li, 2020; I: *Mesolep. mesorufa* sp. nov. (KPM-NK 84859, holotype); J: *Alcochera nigra* sp. nov. (KPM-NK 91248, holotype); K: *Campodorus albimarginalis* sp. nov. (KPM-NK 84956, holotype); L: *Ca. japonicus* sp. nov. (KPM-NK 84961, holotype); M: *Ca. rufidorsalis* sp. nov. (KPM-NK 84958, holotype); N: *Hyperbatus ariminensis* sp. nov. (KPM-NK 84935, holotype); O: *H. borealis* sp. nov. (KPM-NK 84936, holotype); P: *H. montanus* sp. nov. (KPM-NK 84937, holotype); Q: *H. nigrifemur* sp. nov. (KPM-NK 84958, holotype); R: *Lagarotis nigra* sp. nov. (KPM-NK 91258, holotype); S: *Lamachus albopictus* Cushman, 1937 (KPM-NK 84940); T: *Lamachus montanus* sp. nov. (KPM-NK 84944, holotype); U: *Leipula pulchra* sp. nov. (KPM-NK 84905, holotype); V: *Mesoleius morishitai* sp. nov. (KPM-NK 84966, holotype); W: *Perispuda bibullata* Sheng, 1999 (KPM-NK 84911); X: *Perilissus autumnalis* sp. nov. (KPM-NK 91241, holotype); Y: *Lethades kanagawensis* sp. nov. (KPM-NK 81378, holotype).

Hiyoshi, 12. VI. 2015, K. Watanabe leg. (LT); KPM-NK 84783, F, Nagano Pref., Kawakami Vil., Azusayama, 14. VI. 2015, K. Watanabe leg.; KPM-NK 84784, F, Fukui Pref., Ikeda Town, Mizuumi, Mt. Heko-san, 18. VI. 2016, S. Shimizu leg. RUSSIA: ZISP, F (holotype), Khamney, Buryatia, 26. VI. 1971, Kasparyan leg.

Distribution. Japan (Kunashiri Is., Hokkaido and Honshu); China and Far East Russia.

Remarks. This is the first record of this species from Hokkaido and Honshu.

Sympherta townesi Hinz, 1991

(SJN: Townes-hirata-maru-himebachi)

(Figs. 37 A, B)

Sympherta townesi Hinz, 1991: 42.

Description. See Hinz (1991).

Specimen examined. JAPAN: KPM-NK 84765, F, Hokkaido, Tomakomai City, Utonai-ko, 18. VI. 2006, K.

Watanabe leg.; KPM-NK 84766, F, Hokkaido, Hidaka Town, Uenzaru-gawa, 1–28. VIII. 2007, A. Ueda leg.; KPM-NK 84767–84769, 3 F, ditto, 10. VII. – 1. VIII. 2007; AEI, F (holotype), Nagano Pref., Kamikochi, 25. VII. 1954, Townes family leg.

Distribution. Japan (Kunashiri Is., Hokkaido, and Honshu); China and Far East Russia.

Remarks. This is the first record of this species from Hokkaido.

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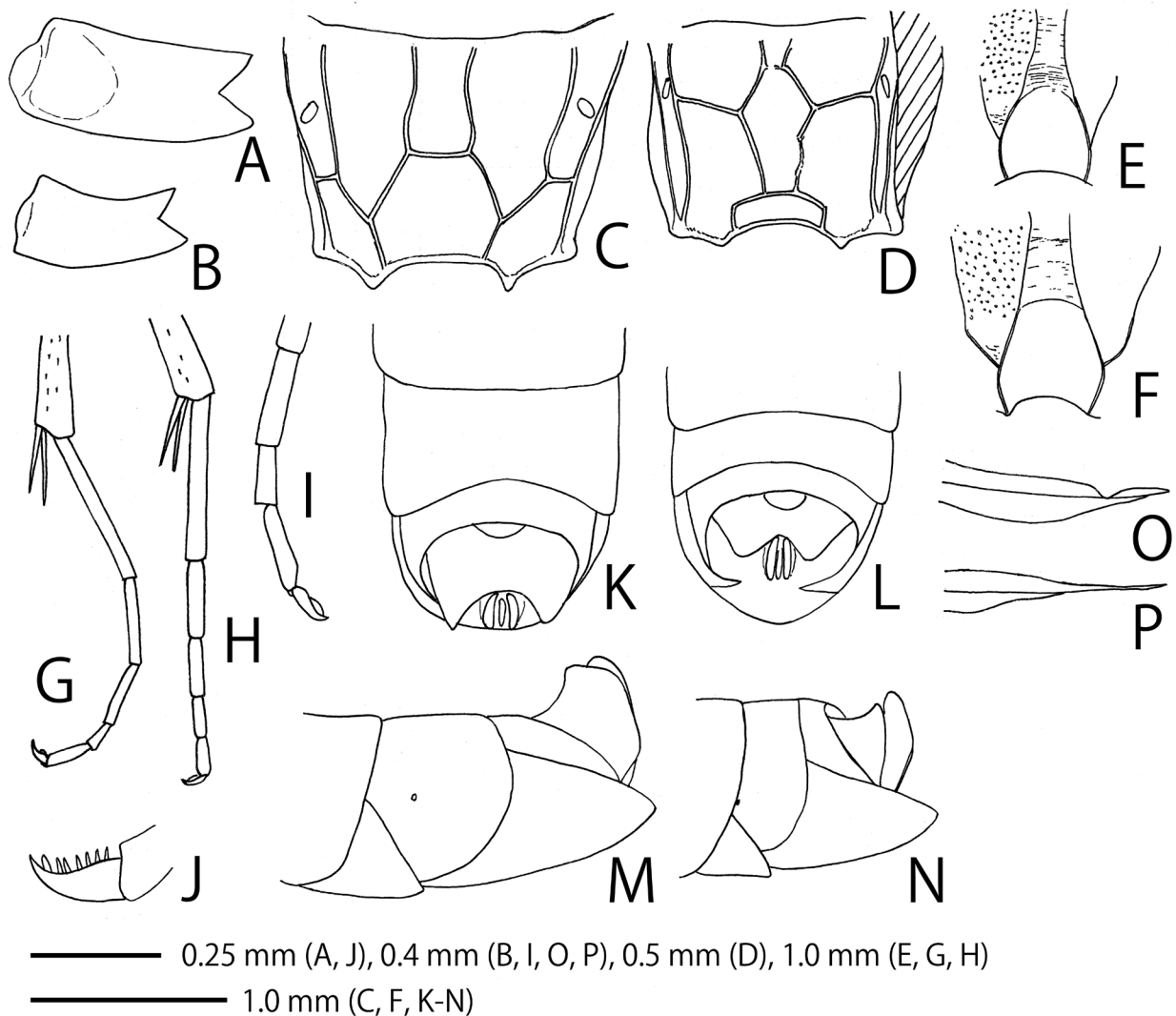


Fig. 41. Mandible (A, B), propodeum, dorsal view (C–F), left hind tarsus (G–I), left hind tarsal claw (J), apical part of metasoma, dorsal (K, L) and lateral (M, N) view, and apex of ovipositor, lateral view (O, P), females —A: *Euryproctus japonicus* (Ashmead, 1906) (KPM-NK 84826); B, D: *Perilissus autumnalis* **sp. nov.** (KPM-NK 91241, holotype); C, J, O: *Ctenopelma boreale* Holmgren, 1857 (C, O: KPM-NK 84794; J: KPM-NK 84795); E, K, M: *Notopygus bicornis* **sp. nov.** (KPM-NK 81355, holotype); F, L, N: *N. japonicus* **sp. nov.** (KPM-NK 84831, holotype); G: *Hyperbatus ariminensis* **sp. nov.** (KPM-NK 84935, holotype); H: *H. nigrifemur* **sp. nov.** (KPM-NK 84958, holotype); I: *Lethades kanagawensis* **sp. nov.** (KPM-NK 81378, holotype); P: *Ctenopelma pineatus* Sheng, Sun & Li, 2019 (KPM-NK 84787).

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摘 要

渡辺恭平, 2024. 22 新種を含む日本産マルヒメバチ亜科 (ハチ目、ヒメバチ科) の分類学的研究. 神奈川県立博物館研究報告 (自然科学), (53): 39–102. [Watanabe, K., 2023. Taxonomic Study of Japanese Ctenopelmatinae (Hymenoptera, Ichneumonidae), with Descriptions of 22 New Species. Bull. Kanagawa Pref. Mus. (Nat. Sci.), (53): 39–102.]

日本産マルヒメバチ亜科 (ハチ目ヒメバチ科) の 17 属 37 種を分類学的に検討した。 *Mesoleptidea* Viereck, 1912, *Lagarotis* Förster, 1869 および *Lethades* Davis, 1897 の 3 属を新たに日本から記録した。 22 新種、フタコブマガリマルヒメバチ *Notopygus bicornis* **sp. nov.**、ニッポンマガリマルヒメバチ *N. japonicus* **sp. nov.** (以上 Ctenopelmatini) ; クラヤミマルヒメバチ *Anisotacrus nocturnus* **sp. nov.**、ヒメマルヒメバチ *An. pulchellus* **sp. nov.**、ドテマルヒメバチ *Euryproctus flavidens* **sp. nov.**、アマノホソマルヒメバチ *Mesoleptidea amanoi* **sp. nov.**、ニッポンホソマルヒメバチ *Mesolep. japonica* **sp. nov.**、ムネアカホソマルヒメバチ *Mesolep. mesorufa* **sp. nov.** (以上 Euryproctini) ; フトクロマルヒメバチ *Alcochera nigra* **sp. nov.**、シロヘリコマルヒメバチ *Campodorus albimarginalis* **sp. nov.**、マダラコマルヒメバチ *Ca. japonicus* **sp. nov.**、ムネアカコマルヒメバチ *Ca. rufidorsalis* **sp. nov.**、アリミネコマルヒメバチ *Hyperbatus ariminensis* **sp. nov.**、キタコマルヒメバチ *H. borealis* **sp. nov.**、アシブトコマルヒメバチ *H. montanus* **sp. nov.**、ミヤマコマルヒメバチ *H. nigrifemur* **sp. nov.**、クロナガマルヒメバチ *Lagarotis nigra* **sp. nov.**、タカミネマルヒメバチ *Lamachus montanus* **sp. nov.**、ノウダイマルヒメバチ *Leipula pulchra* **sp. nov.**、オオコマルヒメバチ *Mesoleius morishitai* **sp. nov.** (以上 Mesoleiini) ; アキノマルヒメバチ *Perilissus autumnalis* **sp. nov.** (Perilissini) ; カナガワヒラタマルヒメバチ *Lethades kanagawensis* **sp. nov.** (Pionini) を記載し、学名と標準和名を命名した。 *Ischnus karafutonis* Matsumura, 1911 を新たにカラフトツヤマルヒメバチ *Ct. boreale* Holmgren, 1857 の異名として認めた。ホソミツヤマルヒメバチ *Ctenopelma pineatus* Sheng, Sun & Li, 2019、オオツヤマルヒメバチ *Ct. rufofasciatum* Sheng, Sun & Li, 2019 (以上 Ctenopelmatini)、シロスジホソマルヒメバチ *Mesolep. maculata* Sheng, Sun & Li, 2020 (Euryproctini)、シロオビマルヒメバチ *Al. flavochypeata* Sheng & Sun, 2021 およびナガセマルヒメバチ *Perispuda bibullata* Sheng, 1999 (以上 Mesoleiini) を日本から新たに記録し、標準和名を命名した。上記のほか、10 種について日本国内における新分布記録を報告した。今回扱った属のうち、日本国内に複数種が分布する全ての属について、日本産種 (一部は世界の種) への検索表を提供した。