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Generic Revision of the Subfamily Euphorinae (Hymenoptera: Braconidae) from Japan

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Abstract The Euphorine fauna of Japan is revised. Five genera, *Chrysopophthorus* Goidanich, *Cryptoxilos* Viereck, *Proclithrophorus* Tobias & Belokobylskij, *Spathicopsis* van Achterberg and *Wesmaelia* Foerster, and one subgenus, *Centistes* Haliday of the genus *Centistes* Haliday, are recorded for the first time from Japan. Fourteen species, *Centistes (Ancylocentrus) ater* (Nees), *C. (A.) planivalvis* Belokobylskij, *C. (Centistes) intermedius* Chen & van Achterberg, *C. (C.) tsherskii* Belokobylskij, *Chrysopophthorus hungaricus* (Kiss), *Meteorus kunashiricus* Belokobylskij (= *M. micropterus* sensu Maeto), *M. vexator* (Haliday), *Perilitus kokujevi* Tobias, *Peristenus accinctus* (Haliday), *P. xanthos* Chen & van Achterberg, *Pygostolus falcatus* (Nees), *Spathicopsis flavocephala* van Achterberg, *Streblocera (Streblocera) spasskensis* Belokobylskij, and *Wesmaelia lepos* Belokobylskij, are new to Japan. Also, two new species, *Cryptoxilos hiemalis* sp. nov. and *Proclithrophorus orientalis* sp. nov., are described from the southwestern islands of Japan. In total, 30 genera, 11 subgenera and 113 species of euphorines are known from Japan. In addition, a new host record is provided, i.e., *Peristenus xanthos* Chen & van Achterberg reared from adult *Stenotus rubrovittatus* (Miridae). A key to the genera and subgenera of Japanese Euphorinae is provided.

Keywords: *Chrysopophthorus*, *Cryptoxilos*, new records, new species, *Proclithrophorus*, *Spathicopsis*, *Wesmaelia*.

Introduction

The braconid subfamily Euphorinae (Hymenoptera) is a hyperdiverse and cosmopolitan group of parasitoid wasps, containing 59 valid genera and approximately 1,300 species (Yu *et al.*, 2016). Many Euphorinae excluding Meteorini, which are larval endoparasitoids of Lepidoptera and Coleoptera, are rather unusual in attacking the adult stage of various insect orders (e. g., Shaw, 1985; 1988; Chen & van Achterberg, 1997).

In Japan, the tribe Meteorini and the genus *Aridelus* Marshall have been comprehensively revised by Maeto (1986a; 1986b; 1988a; 1988b; 1989a; 1989b; 1990) and Fujie & Maeto (2022), respectively, but other Euphorinae are poorly studied. Therefore, only 25 genera, 10 subgenera, and 97 species of Euphorinae have been recorded from Japan, excluding the Northern Territories (e.g., Watanabe, 1937; Belokobylskij, 2000g; Fujie & Maeto, 2014; Fujie & Katayama, 2020; Fujie & Maeto, 2022). However, the diversity of Euphorinae in Japan will be potentially much higher, because many other taxa have been recorded from neighboring regions such as China, Korea, and Russian Far East (e.g., Belokobylskij, 1987a; 1987b; 1992; 1993; 1995; 1996; 2000a; 2000b; 2000c; 2000d; 2000e; 2000f; Chen & van Achterberg, 1997; Li *et al.*, 2021). The purpose of this study is to present a comprehensive treatment of euphorine fauna of Japan (excluding the Northern Territories), with providing a key to Japanese genera, the updated checklist of species, new faunal records of genera and species, and descriptions of new species. During our study of Japanese Euphorinae, we have recognized 30 genera, 11 subgenera, and 113 species.

The subfamily Euphorinae is highly polymorphic and its monophyly had been long discussed (e.g., Dowton *et al.*, 2002; Pitz *et al.*, 2007; Sharanowski *et al.*, 2011). Recently, Stigenberg *et al.* (2015) revealed its monophyly and recognized 14 tribes of Euphorinae based on molecular phylogenetic analyses. After that, Chen & van Achterberg (2019) added two new tribes: Eadyini and Proclithrophorini. However, a more detailed

analysis of available characters is needed to demonstrate the morphological synapomorphies of euphorine tribes. Therefore, we do not refer to the tribes in this study. Besides, the genus *Leiophron* Nees is not divided into subgenera in this study because the molecular analysis by Stigenberg *et al.* (2015) did not support the validity of its subgenera.

Materials and Methods

Materials examined and type specimens are kept in the following collections:

APM: Akita Prefectural Museum, Akita, Japan.

ANSP: Academy of Natural Sciences of Philadelphia, Philadelphia, USA.

CNC: Canadian National Collection of insects, Ottawa, Canada.

EIHU: Entomological Institute, Hokkaido Imperial University, Sapporo, Japan.

FHS: Forstlichen Hochschule Eberswalde, Eberswalde, Germany.

IFF: Institut für Forstentomologie und Forstschutz, Wien, Austria.

IZANU: Institute of Zoology, Ukrainian Academy of Sciences, Kiev, Ukraine.

IZCAS: the Institute of Zoology, Chinese Academy of Sciences, Beijing, China.

MNHAH: Museum of Nature and Human Activities, Hyogo, Sanda, Japan.

MZS: Museo ed Istituto di Zoologia Sistemica, Università di Torino, Turin.

NARO: Insect Museum, National Agriculture and Food Research Organization (NARO), Tsukuba, Japan (previously referred to as NIAES, National Institute for Agro-Environmental Sciences).

NHM: Natural History Museum, London, United Kingdom.

NM: Naturhistorisches Museum, Vienna, Austria.

NMB: Naturhistorisches Museum Bern, Berne, Switzerland.

NMI: National Museum Ireland, Dublin, Ireland.

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

RMNH: Naturalis Biodiversity Center, Leiden, Netherlands.

SNU: Institute of Zoology, Shaanxi Normal University, Shaanxi, China.

TARI: Taiwan Agricultural Research Institute, Taichung, Taiwan.

TMA: Termesztudományi Múzeum Allatara, Budapest, Hungary.

UDE: University department of Entomology, Uppsala, Sweden.

USNM: National Museum of Natural History, Washington, D. C., USA.

ZAU: Zhejiang Agricultural University, Hangzhou, China.

ZI: Zoologiska Institution, Lund, Sweden.

ZISP: Zoological Institute, Academy of Science, St. Petersburg, Russia.

ZMHU: Museum für Naturkunde der Humboldt Universität zu Berlin, Germany.

Morphological observation was conducted using a stereoscopic microscope (SMZ800N, Nikon, Tokyo, Japan). The specimens were photographed using a digital microscope (VHX-1000, Keyence, Osaka, Japan) with a 10–130× lens. Multi-focus photographs were stacked in the software associated with the Keyence System. The figures were edited using Microsoft PowerPoint 2019.

The morphological terminology used is mostly based on van Achterberg (1988; 1993). OOL, OD, and POL refer to the ocellar-ocular line, the diameter of the posterior ocellus, and the postocellar line, respectively. MsT., LT., and EmT. refer to a Malaise trap, a light trap, and an emergence trap, respectively. Global distribution is based on Yu *et al.* (2016). New distribution records within Japan are indicated with an asterisk (*).

Results

Family Braconidae Subfamily Euphorinae

Diagnosis. Antennae filiform or monili form. Apical antennal segment sometimes with spine. Scape sometimes elongated. Maxillary palpi 2–6 segmented. Labial palpi 1–3 segmented. Occipital carina present at least laterally, rarely completely absent. Prepectal carina present at least ventrally. Propodeum without a median longitudinal carina. Vein CU1b of fore wing absent, first subdiscal cell open postero-distally. Vein SR1 of fore wing often curved. First metasomal tergite usually petiolate, sometimes broadly sessile or subsessile. Spiracle of first metasomal tergite usually medially or behind middle of tergite. Second and following tergites with a row of setae, exceptionally scattered setae (*Zeleva* Curtis).

Some genera of Euphorinae often resemble Blacinae, but differ in having the propodeum with a comparatively wide areola (with a comparatively narrow areola, or with a median carina, or surface largely and densely reticulate in Blacinae), the ovipositor sometimes wide (always slender in Blacinae), the vein M+CU1 often unsclerotized (sclerotized in Blacinae), and the dorsal carinae of first metasomal tergite running directly to margin of tergite anteriorly and at least basally distinct (more or less curved anteriorly or dorsal carina absent in Blacinae) (van

Achterberg, 1993). Some euphorine genera which have the first metasomal tergite not strongly narrowed basally and the vein r-m of fore wing absent, are often confused with Brachistinae, but the Euphorinae are distinguished by having the vein M+CU1 of fore wing not sclerotized.

Bionomics. Koinobiont endoparasitoids of larvae or adults of various insects (Shenefelt, 1969; Shaw, 1988; Chen & van Achterberg, 1997; Yu *et al.*, 2016).

Japanese genera. As the result of this study, 30 genera and 11 subgenera of Euphorinae are known from Japan. They are identified by the following key. Chief diagnostic features among genera are also shown in Table S1.

Key to the genera and subgenera of Euphorinae in Japan

The present key is principally based on Fujie (2022). The genera *Allurus* Foerster, *Rilipertus* Haeselbarth, *Syntretomorpha* Papp and *Tainiterma* van Achterberg & Shaw, and the subgenera *Chaetocentistes* Belokobylskij and *Syrrhizus* Foerster of the genus *Centistes* Haliday and *Villocera* of the genus *Streblocera*, which are not yet recorded from Japan, are here included in the key, because they occur in neighboring areas of Japan.

1. Trochantellus fused or almost fused with femur (Fig. 10B). Maxillary palp 2–3 segmented. Marginal cell of fore wing with an additional cell apically (Fig. 18B), but often indistinct (Fig. 10C). Body almost entirely granulated (Fig. 10D). Notauli absent 2
 - Trochantellus distinctly separated from femur. (Fig. 16B). Maxillary palp 4–6 segmented. Marginal cell of fore wing without additional cells (e.g., Figs. 11E, 15E, 24B). Sculpture of body and notauli variable 3
2. Antennal segments of female 13 and of male 14. Vein cu-a of fore wing strongly reclivous (Fig. 10C). Arolium of female much longer than claw *Elasmosoma* Ruthe, 1858
 - Antennal segments of both sexes 16. Vein cu-a of fore wing vertical to moderately reclivous (Fig. 18B). Arolium of female normal, somewhat longer than claw *Neoneurus* Haliday, 1838
3. Antenna situated on a protuberance in front of eyes (Figs. 7E, J). Occipital carina ending behind base of (more or less modified) mandible (Figs. 7D, E, I, J). Maxillary palp with 4 segments and labial palp with 1 segment. Scapus protruding, more or less having a tooth apically (Figs. 7E, J). Prepectal carina absent laterally. Ovipositor ribbon-shaped and compressed (Figs. 7A, F). Vein cu-a of hind wing absent. (Genus *Cosmophorus* Ratzeburg, 1848) 4
 - Antenna usually situated more or less between eyes, not on a protuberance (Figs. 9B, 30B). Occipital carina ending above base of usually unmodified mandible (Figs. 13A, C). Maxillary palp with 5–6 segments and labial palp with 2–3 segments. Scapus usually not protruding, without tooth apically. Prepectal carina usually present laterally. Ovipositor cylindrical (Fig. 20G) or compressed 6

4. Mandible widened towards apex, with a distinct additional internal projection (Fig. 7H). Occipital carina not fused with the hypostomal carina reaching edge of head capsule (Fig. 7I). Apical part of ovipositor bended three times (Fig. 7F) Subgenus *Eucosmophorus* Belokobylskij, 2000
- Mandible narrowed towards apex, without an additional internal projection (Fig. 7C). Occipital carina fused with the hypostomal carina behind mandible base (Fig. 7D). Apical part of ovipositor straight or nearly straight (Fig. 7A) 5
5. Vertex with a deep median groove, depressed medially. POL about $\times 2.5$ OD and at least $2.0\times$ distance between anterior and posterior ocelli. Vein 2-SC+R of hind wing comparatively long Subgenus *Regiphorus* van Achterberg, 1993
- Vertex flattened, without a distinct depression medially (Fig. 7B). POL about $\times 1.5$ – 2.0 OD and at most $1.5 \times$ distance between anterior and posterior ocelli (Fig. 7B). vein 2-SC+R of hind wing variable, but usually medium-sized or short ... Subgenus *Cosmophorus* Ratzeburg, 1848
6. Tarsal claws bifurcate and abruptly bent submedially (Figs. 28C, 29D). First metasomal tergite distinctly petiolate (Figs. 28D, 29E). Vein 1-M of hind wing shorter than vein 1r-m (Fig. 29C), or absent; vein cu-a of hind wing usually reduced (Fig. 29C). Vein 1-SR+M of fore wing absent (Fig. 29B). First metasomal tergite closed ventrally at least basal half (Fig. 29F), rarely open ventrally (Fig. 28E). Vein 2-1A of hind wing absent. Vein M+CU1 of fore wing unsclerotized (Fig. 29B) 7
- Tarsal claws simple and submedially evenly curved, not twisted (Fig. 16C); if exceptionally bifurcate (*Allurus*), then first metasomal tergite not petiolate (cf., Fig. 2C). Vein 1-M of hind wing usually as long as vein 1r-m, or longer (e.g., Figs. 4F, 13B, 30D). Vein cu-a of hind wing and vein 1-SR+M of fore wing variable. Basal half of first metasomal tergite variable. Vein 2-1A of hind wing usually present. Vein M+CU1 of fore wing variable 10
7. Occipital carina completely absent. Notauli and sternauli distinct, deep, wide, and coarsely crenulate. [China and India] *Syntretomorpha* Papp, 1962
- Occipital carina developed at least laterally. Notauli and sternauli absent. (Genus *Syntretus* Foerster, 1862) 8
8. Vein 1-SC+R of hind wing absent (Fig. 28B). First metasomal tergite open ventrally (Fig. 28E), entirely longitudinally striate (Fig. 28D) Subgenus *Exosyntretus* Belokobylskij, 1998
- Vein 1-SC+R of hind wing present, sometimes unsclerotized (Fig. 29C). First metasomal tergite closed ventrally (Fig. 29F), usually smooth, rarely sculptured (mostly in ♂) (Fig. 29E) Subgenus *Syntretus* Foerster, 1862
10. Ovipositor and ovipositor sheath strongly depressed, ribbon-like; sheath glabrous dorsally. Eighth tergite of ♀ exposed, distinctly longer than sixth tergite, with membranous area medially. [China and Vietnam] *Tainiterma* van Achterberg & Shaw, 2001
- Ovipositor and ovipositor sheath distinctly compressed; sheath setose. Eighth tergite of ♀ usually retracted, shorter than sixth tergite, without membranous area medially ... 11
11. Metasoma of ♀ strongly compressed laterally (Fig. 17C). Head more or less concave frontally in dorsal view, eyes protruding forward (Fig. 17E). Legs slender and long (Fig. 17C). Hypopygium with long setae apically (Fig. 17H). Mesosoma almost entirely densely granulate *Myiocephalus* Marshall, 1898
- Metasoma of ♀ usually not strongly compressed laterally. Head not concave frontally in dorsal view, eyes not protruding forward (e.g., Figs. 15F, 21C, 22F). Legs less narrow and relatively short. Hypopygium with short hairs apically (Fig. 20G). Mesosoma not granulate 12
12. First metasomal tergite not strongly narrowed basally, more or less broadly sessile (Fig. 2C), or weakly narrowed but never petiolate (Figs. 3C, 23E), if intermediate (Fig. 24C), then vein 1-SR+ M of fore wing absent, and vein M+CU1 of fore wing sclerotized (Fig. 24B) and laterope large (Fig. 24D) (*Spathicopsis*), or vein M+CU1 of fore wing unsclerotized (Fig. 4F) and laterope small (Fig. 4E) (*Centistes*). Vein 1-R1 of fore wing usually longer than length of pterostigma and much longer than width of pterostigma (Figs. 4F, 24B) 13
- First metasomal tergite strongly narrowed at least basal 1/3 and petiolate (e.g., Figs. 1D, 11D, 21E). Laterope usually not developed (Fig. 13F). Vein 1-R1 of fore wing sometimes much shorter than length of pterostigma and shorter (Figs. 11E, 13B, D) to slightly longer than width of pterostigma (Fig. 21C) 20
13. Mesosternum of ♀ very densely felty setose and flattened (Fig. 23C). Tarsi densely and long setose ventrally (Fig. 23D). Apex of antenna with a spine (Fig. 23B) *Pygostolus* Haliday, 1833
- Mesosternum of ♀ normally setose and convex (Fig. 4C). Tarsi normally setose ventrally. Apex of antenna usually without a distinct spine 14
14. First metasomal tergite with a pair of large dorsopes (Fig. 28C). Ovipositor almost straight, not hidden in metasoma (Fig. 28D). Vein M+CU1 of fore wing sclerotized (Fig. 28B). Vein 1-SR+M absent (Fig. 28B). Notauli distinctly present *Spathicopsis* van Achterberg, 1977
- First metasomal tergite without dorsope (Fig. 2C). Ovipositor strongly curved, often hidden in metasoma (Fig. 4E). Vein M+CU1 of fore wing usually unsclerotized (Fig. 4F). Vein 1-SR+M present (Fig. 4F), if rarely absent (*Centistes* (*Syrrhizus*)), then notauli absent 15
15. Vein M+CU1 of fore wing sclerotized (Fig. 2B). Outer side of hind tibia with distinct spines (Fig. 2E). Ovipositor sheath densely setose apically 15

- *Asiacentistes* Belokobylskij, 1995
- Vein M+CU1 of fore wing unsclerotized (Fig. 4F). Outer side of hind tibia without spines. Ovipositor sheath not densely setose apically.....16
16. Tarsal claws bifurcate. Hind coxa with a distinct apico-ventral spine. Sternite sometimes with a pair of teeth. [Nearctic, Oriental and Palaearctic regions] *Allurus* Foerster, 1863
- Tarsal claws simple. Hind coxa without spine. Sternite usually without teeth. (Genus *Centistes* Haliday, 1835) 17
17. Vein 1-SR+M of fore wing absent. Notauli absent. Precoxal sulcus usually absent [Oriental and Palaearctic regions] Subgenus *Syrhizus* Foerster, 1863
- Vein 1-SR+M of fore wing present (Fig. 4F), rarely partly reduced. Notauli and precoxal sulcus often partly developed (Figs. 3C, 4C, D) 18
18. Posterior side of fore coxa very densely setose. Ovipositor sheath thick, widened towards apex. Apex of ovipositor slender and curved. Hypopygium and apical two sternites very densely setose [Oriental and Palaearctic regions] Subgenus *Chaetocentistes* Belokobylskij, 2000
- Posterior side of fore coxa normal, not densely setose. Ovipositor sheath more or less flat, parallel-sided or narrowed to apex, rarely slightly expanded (Fig. 4E). Apex of ovipositor rather wide and straight (Fig. 4E). Hypopygium and apical two sternites normally setose (Fig. 4E) 19
19. Notauli present at least anteriorly as a faint trace (Figs. 3B, 4D), and/or mesoscutum with a distinct medio-posterior pit (Fig. 3B) Subgenus *Ancyclocentrus* Foerster, 1863
- Notauli and the medio-posterior pit of mesoscutum absent Subgenus *Centistes* Haliday, 1835
20. First metasomal tergite extremely long, thin, almost cylindrical, usually smooth, fused ventrally in almost all length (Figs. 1D, 6E, 31E) 21
- First metasomal tergite shorter, usually more or less widened towards apex, more or less sculptured (Figs. 9C, 13E, 21E), usually at least apical 1/3 open ventrally, (Figs. 18D, 21F, 30E) 24
21. Ovipositor short, hidden or very shortly protruding beyond apex of metasoma (Figs. 1A, 12A). Mesosoma almost entirely foveolate (Figs. 1A, C). Notauli indistinct (Fig. 1C). Vein M+CU of fore wing sclerotized (Fig. 1B) or unsclerotized (Fig. 12C) 22
- Ovipositor long, protrudes far beyond apex of metasoma (Figs. 6A, 31A). Mesosoma not foveolate, punctate or densely granulate (Figs. 6C, D, 31C, D). Notauli distinct (Figs. 6D, 31D). Vein M+CU of fore wing unsclerotized (Figs. 6B, 31B) 23
22. Vein r-m of fore wing present (Fig. 1B). Vein SR1 of fore wing complete, marginal cell closed apically (Fig. 1B). Vein M+CU of fore wing distinctly sclerotized (Fig. 1B). Subbasal cell of fore wing closed (Fig. 1B). First metasomal tergite smooth *Aridelus* Marshall 1887
- Vein r-m of fore wing absent (Fig. 12C). Vein SR1 of fore wing incomplete, marginal cell opened apically (Fig. 12C). Vein M+CU of fore wing unsclerotized (Fig. 15C). Subbasal cell of fore wing opened (Fig. 12C). First metasomal tergite sculptured *Holdawayella* Loan, 1967
23. Vein r-m of fore wing present (Fig. 6B). Vein m-cu of fore wing postfurcal (Fig. 6B) *Chrysopophthorus* Goidanich, 1948
- Vein r-m of fore wing absent (Fig. 31B). Vein m-cu of fore wing distinctly antefurcal (Fig. 31B) *Wesmaelia* Foerster, 1862
24. Vein r-m of fore wing present (Fig. 15E) 25
- Vein r-m of fore wing absent (e.g., Figs. 11E, 19D, 30D) 26
25. Marginal cell of hind wing widened apically, sometimes with a faint vein r (Fig. 32A). Fourth and fifth metasomal tergites of both sexes largely densely setose (Fig. 32B) *Zele* Curtis, 1832
- Marginal cell of hind wing narrowed apically, rarely subparallel-sided, without vein r (Fig. 15E). Fourth and fifth metasomal tergites of ♀ largely glabrous, with a single row of hairs (Fig. 16D), rarely in ♂ rather setose *Meteorus* Haliday, 1835
26. Vein M+CU1 of fore wing unsclerotized (e.g., Figs. 13D, 20C). Ovipositor usually curved downward (Figs. 13F, 20G) 27
- Vein M+CU1 of fore wing sclerotized (Figs. 19E, 30D). Ovipositor usually straight (Figs. 9A, 27D) or slightly curved downward (Fig. 30A) 30
27. Ovipositor straight, directed up (Fig. 14B). Scape comparatively long, compressed laterally, with numerous slender spines on inner side (Fig. 14C). Fifth segment of fore tarsus strongly enlarged, about twice as wide as strongly shortened first to fourth segments (Fig. 14D) *Mama* Belokobylskij, 2000
- Ovipositor strongly curved, directed below (Figs. 13F, 20G). Scape comparatively short, not compressed laterally, without spines (Fig. 20B). Fifth segment of fore tarsus not strongly enlarged. First to fourth segments of fore tarsus normally long..... 28
28. Occipital carina straight ventrally or nearly so, separated from hypostomal carina (Fig. 11B). Vein 1-SR+M of fore wing present (Fig. 11E). Vein cu-a of hind wing completely or partly absent (Fig. 11E). Occipital carina usually widely interrupted dorsally. Basal cell of fore wing densely pubescent (Fig. 11E) *Euphorus* Nees, 1834
- Occipital carina curved towards and joining hypostomal carina (Fig. 13C) or connected to it by a branch (Fig.

- 21B). Vein 1-SR+M of fore wing present (Figs. 13B, D, 20C) or absent. Vein cu-a of hind wing often present (Figs. 13B, 20D). Occipital carina complete or widely interrupted dorsally (Figs. 13A, C). Basal cell of fore wing sometimes almost entirely glabrous (Fig. 13D) 29
29. First discal and basal cells of fore wing similarly setose, both subhyaline (Fig. 20C). Vein cu-a of hind wing present (Fig. 20D) and vein 2-CU1 of fore wing sclerotized (Fig. 20C). First metasomal tergite ventrally fused or touching basally (Fig. 21F), usually widened apically (Figs. 20F, 21F). Occipital carina usually complete or narrowly interrupted dorsally (Fig. 21C). Mesosternum usually distinctly sculptured medio-posteriorly and postpectal carina indistinct or absent (Fig. 21D). Vein 1-R1 of fore wing usually longer than 1/3 length of pterostigma (Fig. 20C) *Peristenus* Foerster, 1863
- . First discal cell of fore wing much more setose and often darker than basal cell, which is frequently glabrous (Fig. 13D). Vein cu-a of hind wing variable, if present (Fig. 13B) then first metasomal tergite opened ventrally. Vein 2-CU1 of fore wing variable. First metasomal tergite usually hardly or weakly widened apically (Fig. 13E). Occipital carina usually widely interrupted dorsally (Figs. 13A, C). Mesosternum usually smooth medio-posteriorly and postpectal carina distinct (Fig. 14A). Vein 1-R1 of fore wing usually shorter than 1/3 length of pterostigma (Figs. 13B, D) *Leiophron* Nees, 1818
30. Mandible enormously enlarged (Fig. 22D), about 1.5 times as long as height of head. Mandible with 2 large lobes and 1 acute lobe (Fig. 22D). Clypeus horizontally protruding forward and semicircular in dorsal view (Fig. 22F). Scapus apicoventrally with an acute flange (Fig. 22D) *Proclithrophorus* Tobias & Belokobylskij, 1981
- . Mandible normal and shorter than height of head (Figs. 19C, 30C). Mandible normally with 2 more or less acute teeth. Clypeus (sub)vertical, at most protruding downward (Figs. 9B, 30B). Scapus usually (sub)cylindrical (Figs. 9B, 30B) 31
31. Eyes strongly convergent ventrally, densely pubescent with long hairs (Fig. 8C). Vein m-cu of fore wing completely absent (Fig. 8H). Vein 2-CU1 and 3-CU1 of fore wing unsclerotized (Fig. 8H) *Cryptoxilos* Viereck, 1911
- . Eyes usually not strongly convergent ventrally, bare or rarely sparsely pubescent with short hairs (Figs. 17D, 30C). Vein m-cu of fore wing present (Figs. 19D, 30D). Vein 2-CU1 and 3-CU1 of fore wing sclerotized (Figs. 19D, 30D) 32
32. Scapus distinctly elongate, longer than third antennal segment, usually exceed or reaching top level of vertex (Figs. 25C, 26B, 27B), if intermediate (Fig. 9B), then antenna with 9-10 segments (*Ropalophorus*) or first metasomal tergite punctate-rugose (Fig. 9C) (*Dinocampus*) 33
- . Scapus not elongate, almost equal to or shorter than third antennal segment, not reaching top level of vertex (Fig. 30B). Antenna with at least 16 segments. First metasomal tergite not punctate rugose 40
33. Vein 1-SR+M of fore wing absent (Figs. 26A, 27A). Scapus comparatively longer, usually distinctly exceed top level of vertex (Figs. 25C, 26B, 27B). (Genus *Streblocera* Westwood, 1833) 34
- . Vein 1-SR+M of fore wing present (Fig. 9A). Scapus comparatively shorter, at most slightly exceed top level of vertex (Fig. 9B) 38
34. Mandible with a wide ventral lamella (Fig. 26C). Inner concave side of scapus of ♀ densely setose (Fig. 26B) Subgenus *Cosmophoridia* Hedqvist, 1955
- . Mandible without a wide ventral lamella. Inner concave side of scapus of ♀ usually less densely setose 35
35. Face with an acute horn (Fig. 25C). Fifth metasomal sternite of female with a pair of acute teeth (Fig. 25E). Occipital carina ventrally separated from hypostomal carina ... Subgenus *Asiastreblocera* Belokobylskij, 1987
- . Face without an acute horn (Fig. 27B, E). Fifth metasomal sternite of female without a pair of acute teeth (Fig. 27D). Occipital carina ventrally usually joining hypostomal carina 36
36. Face of ♀ about as long as wide, strongly flattened, and more or less tomentose. Antennal sockets reaching top level of eyes. Seventh antennal segment of ♀ modified [Eastern Palearctic and Oriental region]..... Subgenus *Villocera* Chen & van Achterberg, 1997
- . Face of ♀ distinctly transverse (Fig. 27C), more or less convex, and at most densely setose (Fig. 27B). Antennal sockets near middle level of eyes (Fig. 27B). Seventh antennal segment of ♀ usually not modified (Fig. 27B). ... 37
37. Third antennal segment of ♀ modified, usually with a protruding apical corner, and fourth antennal segment inserted on the middle of third antennal segment (Fig. 27F). Seventh to ninth antennal segments of ♀ normal (Fig. 27F) Subgenus *Streblocera* Westwood, 1833
- . Third antennal segment of ♀ normal, without a protruding apical corner, and fourth antennal segment connected to the apex of third antennal segment (Fig. 27B). Ninth antennal segment (sometimes also seventh and eighth segments) of ♀ more or less protruding apico-ventrally (Fig. 27B) Subgenus *Eutanycerus* Foerster, 1863
38. Antenna with 9–10 segments, and gradually widened apically. First metasomal tergite with a pair of dorsopes *Ropalophorus* Curtis, 1837
- . Antenna with at least 21 segments, and not widened apically (Fig. 9A). First metasomal tergite without dorsopes (Fig. 9C) 39
39. Occipital carina fused with hypostomal carina above base of mandible. Scapus comparatively short, its length

- 2.2–2.6× width (Fig. 9B). Median lobe of mesoscutum entirely densely setose (Fig. 9D). First metasomal tergite distinctly widened apically, coarsely rugulose-reticulate (Fig. 9C). Vein 1-R1 of fore wing distinctly shorter than distance from apex of marginal cell to apex of wing *Dinocampus* Foerster, 1863
- Occipital carina separated from hypostomal carina ventrally. Scapus comparatively long, its length 3.5× width. Median lobe of mesoscutum almost entirely glabrous. First metasomal tergite weakly widened apically, more or less longitudinally striate. Vein 1-R1 of fore wing distinctly longer than distance from apex of marginal cell to apex of wing *Centistina* Enderein, 1912
40. Fourth to sixth antennal segments of ♀ wide and flattened, densely setose, and the setae long and flattened apically (Fig. 16E) *Marshiella* Shaw, 1985
- Fourth to sixth antennal segments cylindrical, normally setose, and the setae not flattened apically (Fig. 30B) . 41
41. First metasomal tergite fused ventrally at least in part and tube-shaped (Fig. 30E). Clypeus distinctly transverse, 2.0–2.5× as wide as high, usually as wide as or wider than face (Fig. 30C) *Townesilitus* Haeselbarth & Loan, 1983
- First metasomal tergite not fused ventrally, clearly separated (Fig. 19D), exceptionally fused baso-ventrally in *Orionis* (Fig. 18D). Clypeus weakly transverse, 1.4–2.2× as wide as high, usually narrower than face (Fig. 19B) ... 42
42. Ovipositor sheath distinctly expanded in apical 1/2. Ovipositor curved downward apically. First metasomal tergite often weakly sculptured. [Palaearctic region] *Rilipertus* Haeselbarth, 1996
- Ovipositor sheath not expanded in apical 1/2, rarely slightly widened. Ovipositor usually straight apically. First metasomal tergite distinctly sculptured, rarely weakly sculptured 43
43. Vein 1-SR+M of fore wing absent (Fig. 17B) *Microctonus* Wesmael, 1835
- Vein 1-SR+M of fore wing present (Fig. 19C) 44
44. Ventral margin of first metasomal tergite broadly united basally (Fig. 18D). Eyes strongly convergent ventrally (Fig. 18C) *Orionis* Shaw, 1987
- Ventral margin of first metasomal tergite not or slightly united basally (Fig. 19D). Eyes weakly convergent ventrally (Fig. 19B).....*Perilitus* Nees, 1819

Genus *Aridelus* Marshall

Aridelus Marshall, 1887. Type. *Aridelus bucephalus* Marshall, 1887.

Helorimorpha Schmiedeknecht, 1907. Type. *Helorimorpha egregia* Schmiedeknecht, 1907. Syn. by Muesebeck (1936).

Diagnosis. Antennal segments 18, filiform to moniliform; maxillary palp with 6 segments; apical antennal segment with an apical spine; occipital carina usually complete, ventrally joining hypostomal carina; mesosoma entirely foveolate; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing present; first metasomal tergite petiolate and completely fused ventrally; laterope and dorsope absent; ovipositor and its sheath shortly exposed.

Distribution. Afrotropical, Australasian, Nearctic, Neotropical, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of larval and adult Acanthosomatidae, Alydidae, Pentatomidae, Plataspidae, and Scutelleridae (Hemiptera) (Shaw *et al.*, 2001; Yu *et al.*, 2016; Fujie & Maeto, 2022). Adults are usually diurnal, but a few species were collected at night in light traps (Fujie & Maeto, 2022).

Japanese species. Six species were recorded in Japan by Fujie & Maeto (2022).

Aridelus dubius Belokobylskij

Aridelus dubius Belokobylskij, 1981. Type. ♂, from Russia in ZISP.

Distribution. Japan, Russian Far East.

Distribution within Japan. Honshū: Niigata Pref., Hiroshima Pref. (Fujie & Maeto, 2022).

Aridelus egregius (Schmiedeknecht)

Helorimorpha egregia Schmiedeknecht, 1907. Type. ♀, from Germany in ZMHU.

Aridelus nigricans Chao, 1974. Syn. by Belokobylskij (2000g). *Aridelus destitutus* Chou, 1987. Syn. by Belokobylskij (2000g).

Distribution. China, Japan, Korea, Russian Far East, Taiwan; Western Palaearctic region.

Distribution within Japan. Honshū: Tōkyō Pref., Fukui Pref.; Kyūshū: Ōita Pref. (Fujie & Maeto, 2022).

Hosts. No host records are available in Japan, while Pentatomidae, Plataspidae and Scutellaridae are known as its hosts (Yu *et al.*, 2016).

Aridelus elasmuchae Maeto & Kudo

Aridelus elasmuchae Maeto & Kudo, 1992. Type. ♀, from Japan in NARO.

Distribution. Japan, Russian Far East.

Distribution within Japan. Hokkaidō; Honshū: Aomori Pref., Miyagi Pref., Tochigi Pref., Toyama Pref., Hyōgo Pref., Tottori Pref.; Shikoku: Ehime Pref.; Kyūshū: *Kumamoto Pref.

(Maeto & Kudo, 1992; Takahashi & Shiraishi, 2018; Fujie & Katayama, 2020; Fujie & Maeto, 2022; present study).

Hosts. *Elasmucha putoni* (Acanthomatidae) in Japan (Maeto & Kudo, 1992).

Examined material. 1♂, Hyōgo Pref., Onsen Town, Mt. Ougino-sen, 6.IX.1991, C. Naitō leg. (MNHAH); 1♀, Kumamoto Pref., Izumi Vil., Mt. Hakuchō-zan, 6.VI.1980, T. Gotō leg. (MNHAH).

Aridelus flavicans Chao

Aridelus flavicans Chao, 1974. Type. ♀, from China in IZCAS. *Aridelus guizhouensis* Luo, 1985. Syn. by Luo & Chen (1994).

Distribution. China, Japan, Russian Far East, Taiwan.

Distribution within Japan. Honshū: Aomori Pref., Tôkyô Pref., Kyôto Pref., Nara Pref., Ôsaka Pref., Hyôgo Pref., Tottori Pref., Hiroshima Pref.; Kyûshû: Fukuoka Pref., Ôita Pref. (Konishi & Maeto 2000; Fujie & Maeto 2022; present study).

Hosts. *Riptortus pedestris* and *Homocercus unipunctatus*

(Alydidae) in Japan (Fujie & Maeto, 2022).

Examined material. 2♀♀, Kyôto Pref., Yawata City, Yawata-hayashinomoto, 2.VII.2022, S. Fujie leg. (OMNH); 2♀♀, Ôsaka Pref., Habikino City, Shakudo, 22.VIII.2020, S. Fujie leg. (OMNH); 1♀, Fukuoka Pref., Ônojô City, Ushikubi, 33.479N / 130.483E, 24.VI.2018, Y. Hisasue leg. (ELKU).

Aridelus rufotestaceus Tobias

Aridelus rufotestaceus Tobias, 1986. Type. ♀, from Russia in ZISP.

Aridelus rufiventris Luo & Chen, 1994. Syn. by Fujie & Maeto (2022).

Distribution. China, Japan, Korea, Russian Far East; Western Palaearctic region.

Distribution within Japan. Honshū: Shizuoka Pref., Toyama Pref., Mie Pref., Kyôto Pref.; Hachijôjima-Is.; Kyûshû: Ôita Pref., Kumamoto Pref.; Yaku-shima Is. (Fujie & Maeto, 2022).



Fig. 1. *Aridelus rutilipoides* Fujie & Maeto, female holotype. — A, Habitus, lateral view; B, fore Wing; C, mesosoma, dorsal view; D, first metasomal tergite, dorsal view.

Hosts. *Glaucias subpunctatus* (Pentatomidae) in Japan (Fujie & Maeto, 2022). Shaw *et al.* (2001) recorded *Nezara viridula* (Pentatomidae) in Europe.

Examined material. 1♀, Ôita Pref., Handa-kôgen, 18.VIII.1977, K. Setoya leg. (MNHAH).

***Aridelus rutilipoides* Fujie & Maeto**
(Figs. 1A–D)

Aridelus rutilipoides Fujie & Maeto, 2022. Type. ♀, from Japan in OMNH.

Distribution. Japan.

Distribution within Japan. Hokkaidô; Honshû: Nagano Pref.; Shikoku: Tokushima Pref. (Fujie & Maeto, 2022; present study).

Examined material. 1♀, Nagano Pref., Shimashima-dani, 25.VIII.1978, K. Maetô leg. (MNHAH).

Genus *Asiacentistes* Belokobylskij

Asiacentistes Belokobylskij, 1995. Type. *Centistes alekseevi* Belokobylskij, 1992.

Diagnosis. Maxillary palp with 5 segments; occipital carina absent dorsally, but present laterally and joining hypostomal carina near mandible; notauli completely absent; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent; first metasomal tergite broad and sessile; dorsope and dorsal carinae absent; laterope shallow and small; ovipositor strongly compressed and curved, its dorsal valve apically with wide, finely aciculate lobe; ovipositor sheath short, thick, truncate and densely setose apically.

Distribution. Oriental and Palaearctic regions.

Bionomics. Hosts unknown. Some Japanese specimens were collected in light traps.

Japanese species. The type species, *Asiacentistes alekseevi* (Belokobylskij), was recorded from Japan by Belokobylskij (2000g).

***Asiacentistes alekseevi* (Belokobylskij)**
(Figs. 2A–E)

Centistes alekseevi Belokobylskij, 1992. Type. ♀, from Primorski Krai in ZISP.

Asiacentistes alekseevi (Belokobylskij, 1992). Transferred by Belokobylskij (1995).

Distribution. China, Japan, Korea, Russian Far East, Taiwan (Yu *et al.*, 2016).

Distribution within Japan. Honshû: *Ishikawa Pref., *Aichi Pref., *Wakayama Pref.; Kyûshû: *Fukuoka Pref. Belokobylskij (2000g) recorded this species from Honshû without indicating detailed locality.

Examined material. 1♀, Ishikawa Pref., Hakusan City, Yawata, 19–25.VII.2009 (MsT.), H. Fukutomi leg. (MUNJ); 1♀, Aichi Pref., Seto City, Jôkôji (Evergreen), 25.V.2000

(YPT.), M. Suzuki leg. (MUNJ); 3♀♀, Wakayama Pref., Susami Town, Susami, 27.VI.2017 (LT.), S. Fujie leg. (OMNH); 1♀, Wakayama Pref., Hashimoto City, Kakinokizaka, 10.VI.2021, H. Kodama leg. (OMNH); 1♀, Hyôgo Pref., Mt. Hyônosen, alt. 700–1,250 m, 21–22.VIII.1978, K. Maetô leg. (NARO); 1♀, Hiroshima Pref., Saijô Town, Kumano, 11.VIII.1976, K. Maetô leg. (NARO); 1♀, Fukuoka Pref., Mt. Hiko-san, 8.VII.1981, K. Maetô leg. (NARO).

Genus *Centistes* Haliday

Ancylus Haliday, 1833 (as subgenus of the genus *Leiofaron*). Type. *Leiofaron (Ancylus) cuspidatus* Haliday, 1833.

Centistes Haliday, 1835 (as subgenus of the genus *Leiofaron*). Type. *Leiofaron (Ancylus) cuspidatus* Haliday, 1833. New name for *Ancylus* Haliday.

Ancyllus Haldeman, 1842. New name for *Ancylus* Haliday.

Syrrhizus Foerster, 1862. Type. *Syrrhizus delusorius* Foerster, 1862.

Ancylacentrus Foerster, 1862. Type. *Ancylus excrucians* Haliday, 1835.

Euphoridea Ashmead, 1900. Type. *Euphoridea claripennis* Ashmead, 1900.

Diagnosis. Maxillary palp with 5–6 segments; occipital carina complete and fused with hypostomal carina ventrally; notauli absent in the subgenus *Centistes* and *Syrrhizus*, or present at least frontal part in the subgenus *Ancylacentrus* and *Chaetocentistes*; tarsal claws simple; vein M+CU1 of fore wing unsclerotized; vein 1-SR+M of fore wing usually present, but absent in the subgenus *Syrrhizus*; vein r-m of fore wing absent; first metasomal tergite sessile or subsessile without dorsope, but with distinct laterope; ovipositor long, often hidden by metasoma, strongly compressed laterally and curved downwards; ovipositor sheath usually short and thickened, sometimes long and rarely thin.

Distribution. Afrotropical, Nearctic, Neotropical, Oceanic, Oriental, and Palearctic regions.

Bionomics. Parasitoids of adult Carabidae, Chrysomelidae, Coccinellidae, Curculionidae and Staphylinidae (Coleoptera) (Yu *et al.*, 2016). Some host records other than Coleoptera need to be verified.

Japanese species and subgenera. One subgenus and three species, *Centistes (Ancylacentrus) aino* (Watanabe), *C. (A.) anatennalis* (Watanabe), and *C. (A.) medythiae* Maeto & Nagai, have been recorded from Japan. Four species as below and one subgenus, *Centistes* Haliday, are recorded from Japan for the first time.

Subgenus *Ancylacentrus* Foerster, 1863

***Centistes (Ancylacentrus) aino* (Watanabe)**

Leiofaron aino Watanabe, 1937. Type. ♀, from Japan in EIHU.

Ancylacentrus aino (Watanabe, 1937). Transferred by Shenefelt (1969).

Centistes (Ancylacentrus) aino (Watanabe, 1937). Transferred by Belokobylskij (1992b).

Distribution. Japan.

Distribution within Japan. Hokkaidô; Honshû: *Akita Pref., Tochigi Pref., *Ibaraki Pref., *Niigata Pref., *Yamanashi Pref., *Toyama Pref., *Ishikawa Pref., *Fukui Pref., *Nara Pref., *Hyôgo Pref., *Tottori Pref.; *Sadogashima Is.; Shikoku: *Tokushima Pref., *Ehime Pref.; *Yaku-shima Is. (Watanabe, 1937; Belokobylskij, 1992; Fujie & Katayama, 2020; present study).

Examined material. 1♀ (holotype), Hokkaidô, Sapporo, 25.VII.1933, C. Watanabe leg. (EIHU); 1♀, Hokkaidô, Sapporo City, Hitsujigaoka, 28.VII–4.VIII.2008 (MsT.), K. Konishi leg. (OMNH); 1♂, Hokkaidô, Esan Town, Kashiwano, 18.VI.2004, H. Suda leg. (OMNH); 1♀1♂, Akita Pref., Senboku City, Nyûtô Spa, alt. 680 m, 13.VIII.2015 (LT.), S. Fujie leg. (OMNH); 1♂, Tochigi Pref., Nishinasuno, 20.V.1988, K. Konishi leg. (NARO); 2♀, Niigata Pref., Itoigawa City, Renge Spa, 20.VIII.2016 (LT.), M. Itô leg. (OMNH); 3♀♀, Niigata Pref., Myôkô City, Suginosawa, Gohachigi, alt. 1,100 m, 30.VII.2016 (LT.), K. Watanabe leg. (KPMNH); 1♂, Niigata

Pref., Myôkô City, Suginosawa, Mt. Sasagamine, alt. 1,250–1,280 m, 29.VII.2016, K. Watanabe leg. (KPMNH); 1♂, Sado Is., Niigata Pref., Sado City, Hakuundai to Mt. Myôken-zan, alt. 830–1,000 m, 4.VIII.2009, K. Watanabe leg. (OMNH); 1♀, Toyama Pref., Nanto City, Togamura-kamimomose, alt. 664 m, 28.VII–4.VIII.2009 (MsT.), W. Watanabe leg. (KPMNH); 1♀, Yamanashi Pref., Hokuto City, Sutamachô-obi, 29.VII.2017, S. Fujioka leg. (OMNH); 1♀, Yamanashi Pref., Nirasaki City, Marunomachi, 26.VI–20.VII.2007 (MsT.), K. Hosoda leg. (OMNH); 1♀1♂, Ishikawa Pref., Kaga City, Mt. Kariyasuyama, 28.VI–18/19.VII.2002 (MsT.), K. Esaki leg. (OMNH); 1♂, Fukui Pref., Ikeda Town, Mizuumi, Mt. Heko-san, alt. 1400–1460 m, 10.VI.2016, S. Shimizu leg. (OMNH); 1♂, same locality and collector, 18.VI.2016 (OMNH); 5♀♀, Nara Pref., Kamikitayama Vil., Kotochi, alt. 850 m, 16–17.VII.2017 (LT.), S. Fujie leg. (OMNH); 1♀, Nara Pref., Totsukawa Vil., Mt. Shakaga-take, 10–11.VIII.2013 (LT.), S. Fujie leg. (OMNH); 1♀, same locality and collection date, M. Itô leg. (OMNH); 1♂, Hyôgo Pref., Kami Town, Niiya, Mikata-



Fig. 2. *Asiacentistes alekseevi* (Belokobylskij), female from Wakayama Prefecture. — A, Habitus, lateral view; B, fore wing; C, propodeum and first to third tergite, dorsal view; D, first metasomal tergite, lateral view; E, hind tibia, lateral view.

kôgen, alt. 700–750 m, 16.VII.2011, S. Fujie leg. (OMNH); 1♂, Tottori Pref., Mt. Daisen, Daisenji, alt. 800 m, 3.VI.1980, I. Kanazawa leg. (NARO); 1♀13♂♂, Tokushima Pref., Miyoshi City, Higashiyasugeoi, Mt. Tsurugi-san, alt. 1,440 m, 33.870163N / 134.080078E, 2–3.VIII.2019 (LT.), S. Shimizu & J. Okayasu leg. (OMNH); 1♂, Ehime Pref., Mt. Takataru-yama, Odamiyama, 12.VII.1994, E. Yamamoto leg. (NARO); 4♀♀, Yaku-shima Is., Shiratani, alt. 600 m, 6.V–20.VI.2000 (MsT.), T. Murata leg. (MUNJ); 1♀, Yaku-shima Is., Mt. Aiko-dake, alt. 170 m, 2.V–5.VI.2007 (MsT.), T. Yamauchi leg. (KPMNH).

Centistes (Ancylocentrus) anatennis (Watanabe)

Leiophron antennalis Watanabe, 1937. Type. ♀, from Japan in EIHU.

Ancylocentrus antennalis (Watanabe, 1937). Transferred by Shenefelt (1969).

Centistes (Ancylocentrus) antennalis (Watanabe, 1937). Transferred by Belokobylskij (1992).

Distribution. Japan, Russian Far East.

Distribution within Japan. *Hokkaidô; Honshû: *Akita Pref., *Fukushima Pref., Tochigi Pref.; *Ibaraki Pref., *Yamanashi Pref., *Nagano Pref., *Gifu Pref., *Toyama Pref., *Fukui Pref., *Hyôgo Pref.; Shikoku: Kôchi Pref. (Watanabe, 1937; Kotani, 1980; Fujie & Katayama, 2020; present study).

Examined material. Shikoku: 1♀ (holotype), Kôchi Pref., Engyôji, 19.IV.1931, Y. Sugihara leg. (EIHU); 1♀, Hokkaido, Nemuro, Shibetsu, Rubesu, 25–28.VIII.1971, K. Yamagishi leg. (MUNJ); 2♀♀, Hokkaido, Kumaishi Town, Kenichi-gawa, Iwafuchi-zawa, 20.VII–1.VIII.1995 (MsT.), Y. Itô & T. Itô leg. (NARO); 1♀, same locality and collector, 10–21.VIII.1995 (MsT.) (NARO); 1♀, Akita Pref., Senboku City, Nyuto Spa, alt. 680 m, 39.7980N / 140.7776E, 13.VIII.2015 (LT.), S. Fujie leg. (OMNH); 1♀1♂, Fukushima Pref., Shôwa Vil., Mt. Hakaseyama, beech forest, alt. 1,000 m, 29.VI–26.VII.1998 (MsT.), T. Muroi leg. (MUNJ); 10♀♀, Ibaraki Pref., Kitaibaraki City, Kaizawa, 2/3–17/18.VII.2002 (MsT.), H. Gotô leg. (NARO); 3♀♀, Ibaraki Pref., Kitaibaraki City, Ogawa, 2/3–17/18.VII.2002 (MsT.), H. Gotô leg. (NARO); 1♀13♂♂, Ibaraki Pref., Kitaibaraki City, Sarugajô, 2/3–17/18.VII.2002 (MsT.), H. Gotô leg. (NARO); 1♂, Ibaraki Pref., Kitaibaraki City, Sadanami, 2/3–17/18.VII.2002 (MsT.), H. Gotô leg. (NARO); 1♀, Ibaraki Pref., Satomi Vil., Okami, 1–5.VII.2003 (MsT.), S. Makino *et al.* leg. (NARO); 2♀♀, Yamanashi Pref., Nirasaki City, Gozaishi Spa, 35.7279N / 138.3539 E, 8–17.VII.2005 (MsT.), K. Hosoda leg. (OMNH); 1♂, Nagano Pref., Japan Alps, Mt. Ootaki-yama, 4.VIII.1955, I. Hattori leg. (NARO); 1♀, Gifu Pref., Motosu City, Nukumi Pass, 13.VII–6.IX.2014 (MsT.), S. Fujie leg. (OMNH); 2♀♀, Toyama Pref., Toyama City, Arimine, Jûrôdani, alt. 1120 m, 16–25.VIII.2009 (MsT.), M. Watanabe *et al.* leg. (KPMNH); 2♀♀, Toyama Pref., Toyama City, Arimine, Inonedani, alt. 1120 m, 11–16.VIII.2009 (MsT.), M. Watanabe *et al.* leg. (KPMNH); 3♀♀, Toyama Pref., Toyama City, Kamegai, alt. 330 m, 21–28.VII.2009 (MsT.), M. Watanabe *et al.* leg. (KPMNH); 1♀, same locality and collector, 28.VII–4.VIII.2009 (MsT.) (KPMNH); 1♀, same locality and collector, 25.VIII–1.IX.2009 (MsT.) (KPMNH); 1♀, Fukui Pref., Oono City, Suhara,

alt. 500 m, 35°51'37.3"N / 136°28'31.8"E, 22.VI–13.VII.2014 (MsT.), S. Fujie leg. (OMNH); 1♂, Fukui Pref., Ikeda Town, Mizuumi, Mt. Heko-san, alt. 1,400–1,460 m, 10.VI.2016, S. Shimizu leg. (OMNH); 1♀, Hyôgo Pref., Kami Town, Niiya, alt. 710 m, 35.4034N / 134.5260E, 15.VI–14.VII.2013, S. Fujie & M. Itô leg. (OMNH).

Centistes (Ancylocentrus) ater (Nees)

(Fig. 3A)

Leiophron ater Nees, 1834. Type. Sex unknown, from Germany, collection unknown.

Distribution. Canada, China, Japan, Russian Far East; Western Palaearctic region. New to Japan.

Distribution within Japan. *Hokkaidô (present study).

Hosts. No host records are available in Japan. While Curculionidae (Coleoptera) and Nepticulidae (Lepidoptera) were recorded as hosts (Yu *et al.*, 2016), the latter should be confirmed.

Examined material. 1♀, Hokkaidô, Nemuro, Shibetsu, Rubesu, 25–28.VIII.1971, K. Yamagishi leg. (MUNJ).

Remarks. The Japanese specimen runs to *C. ater* in the key by Chen & van Achterberg (1997) and Belokobylskij (2000g).

Centistes (Ancylocentrus) medythiae Maeto & Nagai

Centistes medythiae Maeto & Nagai, 1985. Type. ♀, from Japan in ELKU.

Centistes (Ancylocentrus) medythiae Maeto & Nagai, 1985. Newly placed in the subgenus by Belokobylskij (1992).

Distribution. China, Japan, Korea, Russian Far East.

Distribution within Japan. Honshû: *Ibaraki Pref., *Fukui Pref., *Aichi Pref., Okayama Pref. (Maeto & Nagai, 1985; Nagai, 2011; present study).

Hosts. *Medythia nigrobilineata* (Chrysomelidae) in Japan (Maeto & Nagai, 1985).

Examined material. 1♀, Ibaraki Pref., Tsukuba City, emerged from *Medythia nigrobilineata*, 18, 20, 23.X.1989, A. Kikuchi leg. (NARO); 7♀♀1♂ (paratypes), Okayama Pref., Akasaka Town, 22.VII.1983 (1♀1♂), 20.V.1984 (2♀♀), 24.V.1984 (1♀), 12.VI.1984 (1♀), 3.VII.1984 (1♀), 8.VII.1984 (1♀), emerged from adult of *Medythia nigrobilineata* on Soybean, K. Nagai leg. (NARO); 3♀♀, Fukui Pref. Tsuruga City, marsh of Nakaikemi, 24.V–17.VI.2016 (MsT.), A. Noishiki leg. (OMNH); 1♀, same locality and collector, 17.VI–10.VII.2016 (MsT.) (OMNH); 1♀, Aichi Pref., Nagakute City, Aichi Agricultural Research Center, 19.VIII–4.IX.2008 (MsT.), K. Yamagishi leg. (MUNJ).

Remarks. The specimens examined mostly agree with the original description (Maeto & Nagai, 1985), but some specimens differ in having the first metasomal tergite not entirely striate, smooth in apical 1/5 (entirely striate in the original description).

Centistes (Ancylocentrus) planivalvis Belokobylskij
(Fig. 5)

Centistes (Ancylocentrus) planivalvis Belokobylskij, 1992.
Type. ♀, from Russia in ZISP.

Distribution. Japan, Russian Far East. New to Japan.

Distribution within Japan. Honshū: *Nagano Pref., *Nara Pref., *Tottori Pref.; Shikoku: *Tokushima Pref.; Kyūshū: *Miyazaki Pref. (present study).

Examined material. 1♀, Nagano Pref., Ueda City, Sugadaira-kōgen, Tsukuba University, alt. 1,330 m, 36°31'27"N / 138°20'49"E, 12.IX.2013, S. Shimizu leg. (OMNH); 3♀♀, Nara Pref., Kamikitayama Vil., Kotochi, alt. 850 m, LT., 16–17.VII.2017, S. Fujie leg. (OMNH); 1♀, Nara Pref., Totsukawa Vil., Mt. Shakaga-take, 10–11.VIII.2013 (LT.), S. Fujie leg. (OMNH); 4♀♀1♂, Tottori Pref., Yazu Town, Himeji, Mt. Ouginosen, 15–16.VIII.2020 (LT.), S. Fujie leg. (OMNH); 1♀, Tottori Pref., Daisen Town, Mt. Daisen, alt. 960 m, 22–23.VIII.2013 (LT.), S. Fujie leg. (OMNH); 1♀, Tokushima Pref., Miyoshi City, Higashiyasugeoi, Mt. Tsurugi-san, alt. 1,440 m, 33.870163N / 134.080078E, 2–3.VIII.2019 (LT.), S. Shimizu & J. Okayasu leg. (OMNH); 4♀♀, Miyazaki Pref. Takachiho Town, Gokasho, 32.809N / 131.277E, alt. 800 m, 24.VIII.2019 (LT.), K. Nishiya leg. (OMNH).

Remarks. The Japanese specimens run in the key by Belokobylskij (2000g) to *C. planivalvis* and agree well with the original description (Belokobylskij, 1992).

Subgenus *Centistes* Haliday, 1835

Centistes (Centistes) intermedius Chen & van
Achterberg, 1997
(Fig. 5A)

Centistes (Centistes) intermedius Chen & van Achterberg,

1997. Type. ♀, from China in ZAU.

Distribution. China, Japan. New to Japan.

Distribution within Japan. *Hokkaidō (present study).

Examined material. 1♀, Hokkaidō, Sapporo City, Mt. Muine-yama, alt. 400–1,000 m, 13.VIII.1977, K. Ohara leg. (NARO).

Remarks. Japanese specimen runs to *C. intermedius* in the keys by Chen & van Achterberg (1997) and Belokobylskij (2000g) and agrees well with the original description (Chen & van Achterberg, 1997), but differs in having the 3rd segment of the antenna 1.2 times as long as the 4th one.

Centistes (Centistes) tsherskii Belokobylskij
(Fig. 5B)

Centistes (Centistes) tsherskii Belokobylskij, 1995. Type. ♀, from Russia in ZISP.

Distribution. Japan, Russian Far East. New to Japan.

Distribution within Japan. Honshū: *Tōkyō Pref., *Aichi Pref. (present study).

Examined material. 1♀, Tōkyō Pref., Suginami, 12.IX.1950, N. Fukuhara leg. (NARO); 1♀, Aichi Pref., Kasugai City, Takagi (weed land), 15–21.VI.1994 (EmT.), K. Sanda leg. (NARO).

Remarks. The Japanese specimens run in the key by Belokobylskij (2000g) to *C. tsherskii* and agree well with the original description (Belokobylskij, 1995).

Genus *Centistina* Enderlein

Centistina Enderlein, 1912. Type: *Centistina longicornis* Enderlein, 1912.

Eodinocampus Belokobylskij, 2000 (as subgenus of the genus *Dinocampus*). Type: *Dinocampus nipponicus* Belokobylskij, 2000. Syn. by Belokobylskij (2001).



Fig. 3. *Centistes (Ancylocentrus) ater* (Nees), female, from Hokkaidō (A); *C. (A.) medythiae* Maeto & Nagai, female, from Ibaraki Prefecture (B). — A, Habitus, lateral view; B, mesonotum, dorsal view; C, first metasomal tergite, dorsal view.

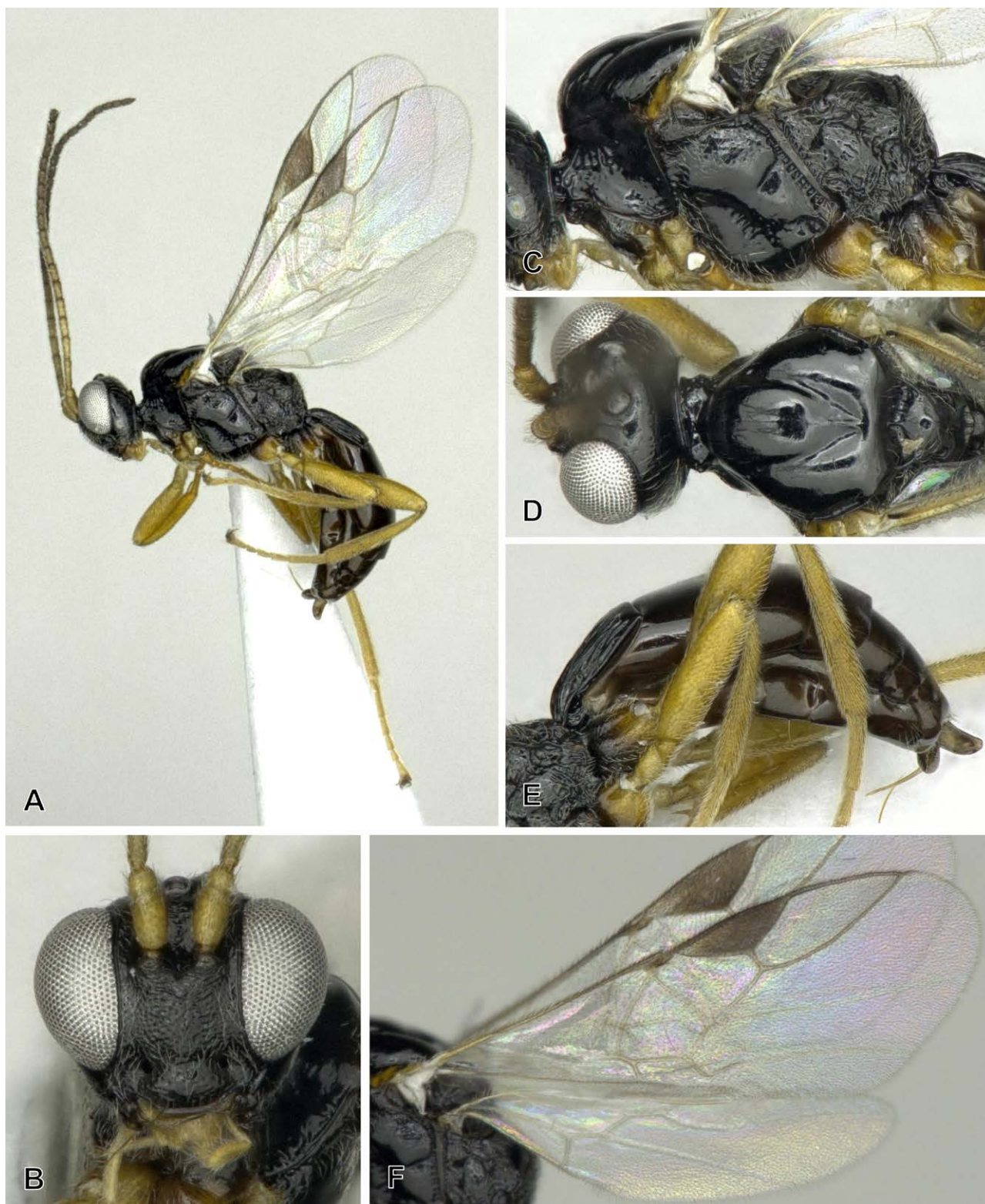


Fig. 4. *Centistes (Ancylocentrus) planivalvis* Belokobylskij, 2000, female, from Hyôgo Prefecture. — A, Habitus, lateral view; B, head, frontal view; C, mesosoma, lateral view; D, head and mesosoma, dorsal view; E, metasoma, lateral view; F, wings.

Diagnosis. Maxillary palp with 5 segments; length of scapus 3.5× width, distinctly longer than third antennal segment; occipital carina complete, separated from hypostomal carina ventrally; notauli present; median lobe of mesoscutum almost entirely glabrous; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent;

vein 1-R1 of fore wing distinctly longer than distance from apex of marginal cell to apex of wing; first metasomal tergite petiolate and weakly widened apically, with dorsope, but without laterope; ovipositor and ovipositor sheath slender, straight.

Distribution. Afrotropical, Neotropical, and Palearctic



Fig. 5. *Centistes (Centistes) intermedius* Chen & van Achterberg, female, from Hokkaidô (A); *C. (C.) tsherskii* Belokobylskij, from Aichi Prefecture (B). — A, B, Habitus, lateral view.

regions.

Bionomics. Unknown.

Japanese species. One species, *Centistina nipponicus* (Belokobylskij), has been recorded from Japan.

Centistina nipponicus (Belokobylskij)

Dinocampus nipponicus Belokobylskij, 2000. Type. ♂, from Japan in NARO.

Dinocampus (Eodinocampus) nipponicus Belokobylskij, 2000. Newly placed in the subgenus by Belokobylskij (2000g).

Centistina nipponicus (Belokobylskij, 2000). Transferred by Belokobylskij (2001).

Distribution. Japan.

Distribution within Japan. Honshû: Aichi Pref. (Belokobylskij, 2000a).

Examined material. 1♂ (holotype), Aichi Pref., Shitara, Uradani, 900 m, beech forest, 8–14.VIII 1994 (EmT.), T. Kanbe leg. (NARO).

Genus *Chrysopophthorus* Goidanich

Chrysopophthorus Goidanich, 1948. Type: *Chrysopophthorus chrysopimuginis* Goidanich, 1948 [= *C. hungaricus* (Kiss, 1927)].

Diagnosis. Maxillary palp with 6 segments; apical antennal segment with an apical spine; occipital carina complete, ventrally joining hypostomal carina; notauli present; vein M+CU1 of fore wing unsclerotized; vein 1-SR+M of fore

wing present; vein r-m of fore wing present; first metasomal tergite tubular, extremely elongate, subparallel-sided, and fused ventrally; laterope and dorsope absent; ovipositor and ovipositor sheath slender, straight.

Distribution. Australasian, Nearctic, Neotropical, Oceanic, Oriental, and Palearctic regions.

Bionomics. Parasitoids of adult Chrysopidae (Neuroptera) (Yu *et al.*, 2016). Japanese specimens were often caught in light traps.

Japanese species. This genus is recorded for the first time from Japan. One species, *Chrysopophthorus hungaricus* (Kiss), is distributed in Japan.

Chrysopophthorus hungaricus (Kiss)

(Figs. 6A–E)

Helorimorpha hungarica Kiss, 1927: Type. ♀, from Romania in TMA.

Distribution. Iran, Japan, Korea, Russian Far East; Western Palearctic region. New to Japan.

Distribution within Japan. *Hokkaidô; Honshû: *Saitama Pref., *Ishikawa Pref., *Nara Pref., *Hyôgo Pref.; Shikoku: *Ehime Pref.; Kyûshû: *Fukuoka Pref. (present study).

Hosts. No host records are available in Japan, while Chrysopidae (*Chrysopa* and *Mallada*) are known as its hosts (Yu *et al.*, 2016).

Examined material. Japan. 1♂, Hokkaidô, Mt. Soranumadake, 25.VII.1982, M. Miyazaki leg. (NARO); 1♂, Saitama Pref., Ogawa Town, Mt. Kinshô-zan, 17.VII.1993 (LT.), M. Uchida leg. (NARO); 1♂, Ishikawa Pref., Hakusan,

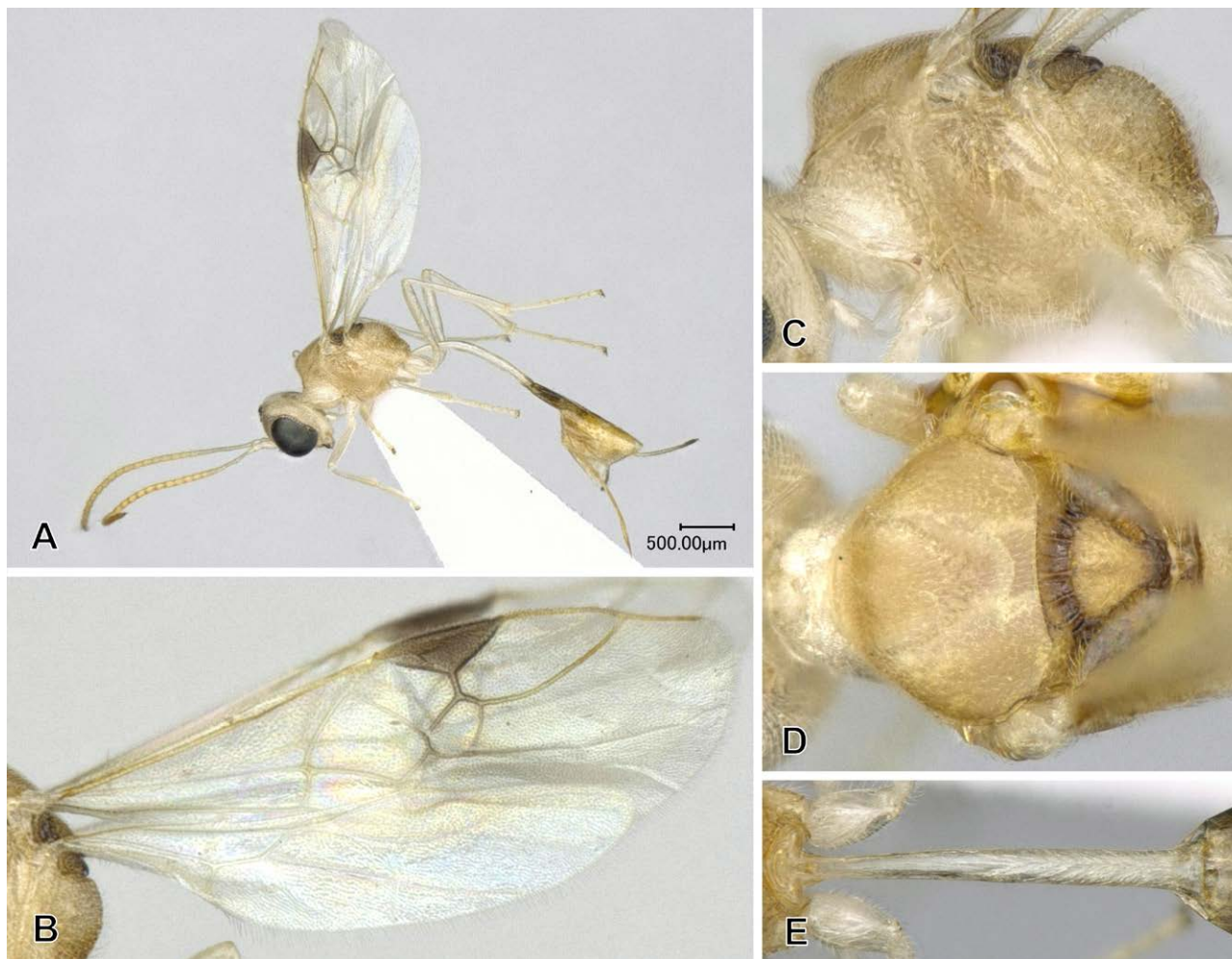


Fig. 6. *Chrysopophthorus hungaricus* (Kiss), female, from Nara Prefecture. — A, Habitus, lateral view; B, wings; C, mesosoma, lateral view; D, mesonotum, dorsal view; E, first metasomal tergite, dorsal view.

Sannomiya, 21–27.VI.2009, (MsT.) H. Fukutomi leg. (MUNJ); 1♀, Nara Pref., Yamatokōriyama City, Yamada-chō, Naragakuen, alt. ca. 120 m, 34.635N / 135.736E, 24.VII.2018, R. Itō leg. (OMNH); 2♀♀1♂, Nara Pref., Kamikitayama Vil., Kotochi, alt. 850 m, 16–17.VII.2017 (LT.), S. Fujie leg. (1♀ NARO, 1♀ and 1♂ OMNH); 1♀, Nara Pref., Higashiyoshino Vil., Sugitani, 25.VIII.2018, S. Fujie leg. (NARO); 1♀, Hyōgo Pref., Kami Town, Ōasa, Hachikita Heights, alt. 885 m, 24–25.VIII.2016 (LT.), T. Tokuhira leg. (OMNH); 1♂, Ehime Pref., Matsuyama City, Takanawa-san, 11.VIII.2017, R. Matsumoto leg. (OMNH); 1♂, Fukuoka Pref. Itoshima City, Kamiari, 33.543N / 130.183E, 17.IV.2021, Y. Hisasue leg. (ELKU).

Remarks. The Japanese specimens examined agree with the redescription by van Achterberg (1994); they slightly differ in having the length of first metasomal tergites 4.9–6.2× (female) and 4.6–5.4× (male) its apical width (maximum 5.6× (female) and minimum 3.6× (male) in the redescription).

Genus *Cosmophorus* Ratzeburg

Cosmophorus Ratzeburg, 1848. Type. *Cosmophorus klugii* Ratzeburg, 1848.

Sinuatophorus van Achterberg, 2000. Type. *Sinuatophorus maximus* van Achterberg, 2000. Syn. by Stigenberg *et al.*

(2015).

Diagnosis. Antennal sockets protruding as much as width of scapus, anterior margin raised in one or two sharp points; Maxillary palp with 4 segments; labial palpi with 1 segment; occipital carina interrupted mediodorsally, ventrally joining hypostomal carina, or not fused (subgenus *Eucosmophorus*); notauli absent; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing absent; vein r-m of fore wing absent; first metasomal tergite sessile, not fused ventrally; laterope and dorsope absent; ovipositor compressed, ribbon-shaped, straight or sinuated apically.

Distribution. Afrotropical, Australasian, Nearctic, Oceanic, Oriental, and Palaeartic regions.

Bionomics. Parasitoids of adult Curculionidae, mainly of the Scolytinae (Coleoptera) (Yu *et al.*, 2016).

Japanese species and subgenera. Four species, *Cosmophorus* (*Cosmophorus*) *cembrae* (Ruschka), *C. (C.) klugii* (Ratzeburg), *C. (Eucosmophorus) undulatus* Belokobylskij, and *C. (Regiphorus) regius* Niezabitowski, have been recorded from Japan.

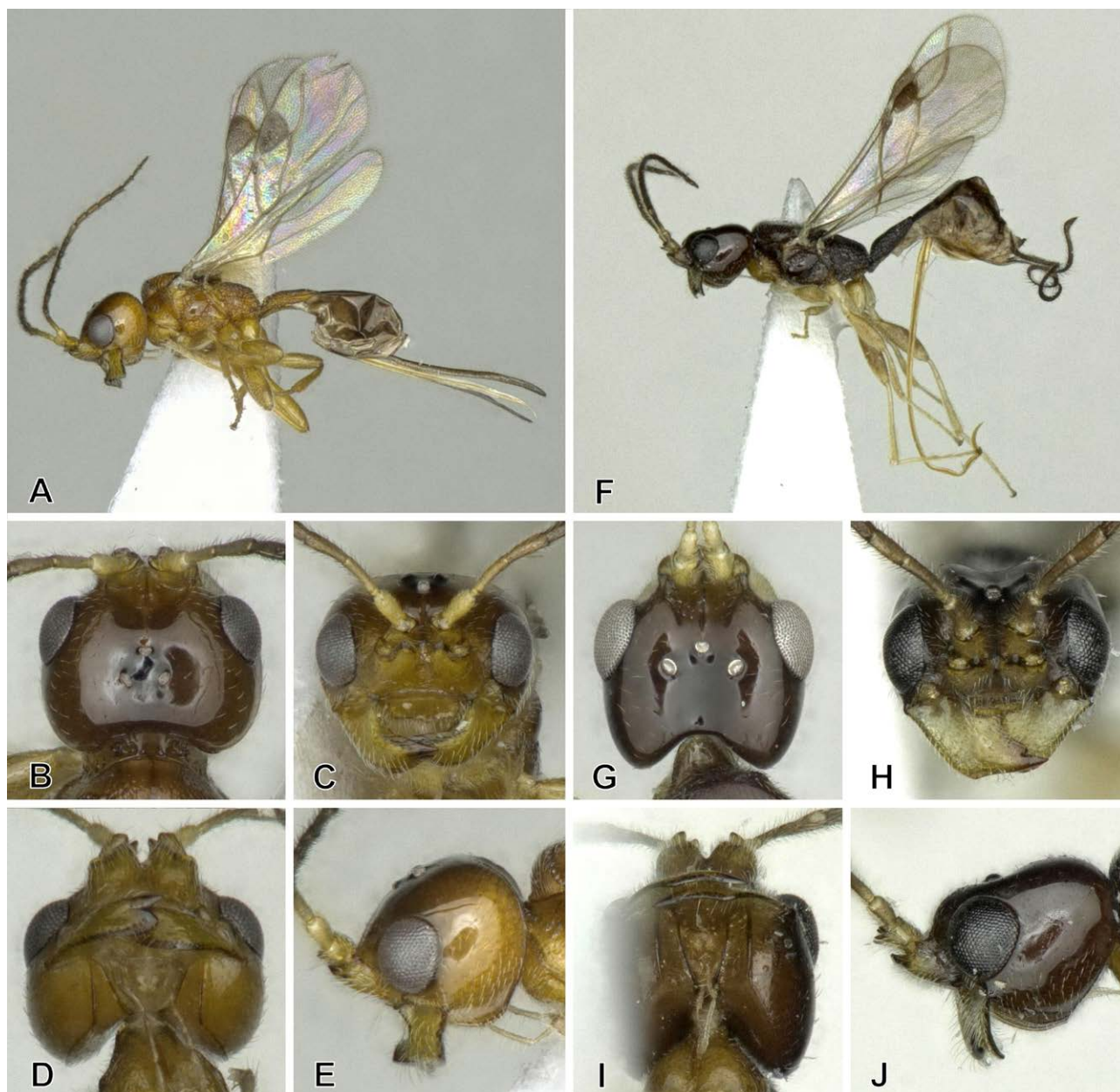


Fig. 7. *Cosmophorus* (*Cosmophorus*) sp., female, from Ōsaka Prefecture (A–E); *C.* (*Eucosmophorus*) sp., female, from Ishigaki Is. (F, H, I, J), and from Ishikawa Prefecture (G). — A, F, Habitus, lateral view; B, G, head, dorsal view; C, H, head, frontal view; D, I, Head, ventral view; E, J, head, lateral view.

Subgenus *Cosmophorus* Ratzeburg, 1848

Cosmophorus (*Cosmophorus*) *cembrae* Ruschka

Cosmophorus cembrae Ruschka, 1925. Type. sex unknown, from Austria in IFF.

Distribution. Japan, Korea, Russian Far East; Western Palaearctic region.

Distribution within Japan. Honshū: Mie Pref. (Watanabe, 1968).

Hosts. *Cryphalus fulvus* (Curculionidae) in Japan (Watanabe, 1968). Curculionidae (*Ceutorhynchus*, *Cryphalus*, *Pityogenes bidentatus*, *Pityokteines*, *Pityophthorus*, *Polygraphus*) are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Mie Pref., Mihama Town, host: *Cryphalus fulvus*, IV–V.1967, H. Watashi leg. (EIHU).

Cosmophorus (*Cosmophorus*) *klugii* Ratzeburg

Cosmophorus klugii Ratzeburg, 1848. Type. ♀, from Germany in FHS, lost.

Distribution. China, Japan; Western Palaearctic region.

Distribution within Japan. Hokkaidō, Kyūshū: Fukuoka Pref., Kumamoto Pref. (Watanabe, 1960; 1968; Yasunaga, 1962).

Hosts. *Polygraphus proximus* (Curculionidae) in Japan (Watanabe, 1960). Curculionidae (*Carphoborus*, *Dryocoetes*, *Hylurgops*, *Ips*, *Pityogenes*, *Pityokteines*, *Polygraphus*) are

also known as its hosts.

Examined material. 1♀, Hokkaidō, Okoppe, collected from a tunnel of *Polygraphus proximus*, 8.X.1958, C. Watanabe leg. (EIHU).

Subgenus *Eucosmophorus* Belokobylskij, 2000

Cosmophorus (Eucosmophorus) undulatus
Belokobylskij

Cosmophorus undulatus Belokobylskij, 2000. Type. ♀, from Japan in ZISP.

Cosmophorus (Eucosmophorus) undulatus Belokobylskij, 2000. Newly placed in the subgenus by Belokobylskij (2000g).

Distribution. Japan.

Distribution within Japan. Ishigaki-jima Is. (Belokobylskij, 2000a).

Examined material. 1♀ (holotype), Okinawa Pref., Ishigaki-jima Is., 19–21.X.1999, S. Belokobylskij leg. (ZISP).

Subgenus *Regiphorus* van Achterberg, 2000

Cosmophorus (Regiphorus) regius Niezabitowski

Cosmophorus regius Niezabitowski, 1910. Type. sex unknown, from Poland, lost.

Distribution. China, Japan, Russia; Western Palearctic region.

Distribution within Japan. Hokkaidō (Watanabe, 1968).

Hosts. No host records are available in Japan, while Curculionidae (*Dryocoetes*, *Hylastes*, *Ips*, *Polygraphus*, *Trypodendron*) and Nitidulidae (*Pityophagus*) are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Hokkaidō, Aizankei, 3.VIII.1966, K. Kushigemati leg. (EIHU).

Genus *Cryptoxilos* Viereck

Cryptoxilos Viereck, 1911. Type. *Cryptoxilos dicromorphus* Viereck, 1911.

Cryptoxiloides Capek & Capecki, 1979. Type. *Cryptoxiloides cracoviensis* Capek & Capecki, 1979. Syn. by Shaw (1985).

Diagnosis. Maxillary palp with 5 segments; labial palpi with 2 segments; occipital carina interrupted mediadorsally, fused with hypostomal carina ventrally; eyes strongly convergent ventrally, densely pubescent with long hairs; mesosoma entirely foveolate; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing absent; vein r-m of fore wing absent; first metasomal tergite subsessile, not fused ventrally; laterope and dorsope absent; ovipositor compressed, ribbon-shaped, straight or sinuated apically.

Distribution. Nearctic, Neotropical, Oceanic, Oriental, and Palearctic regions.

Bionomics. Parasitoids of adult Curculionidae (Coleoptera) (Yu *et al.*, 2016).

Japanese species. This genus is recorded for the first time

from Japan. One new species is described here.

***Cryptoxilos hiemalis* sp. nov.**
(Fig. 8A–G)

Type material. holotype, ♀, “JAPAN: Kyushu Is. Yakushima Miyanoura (Mt) 1.XII.1999–23.I.2000 T. Murata, MT (S. Miyashita)” (MUNJ).

Etymology. The name refers to the collection season (winter) of holotype.

Description. ♀ (holotype, Fig. 8A–G). Body length 2.4 mm.

Head (Fig. 8B–F). Width of head 1.8× median length and 1.1× wider than mesonotum. Antennae with 12 segments, length of 3rd segment 0.92× 4th one, length of 3rd and 4th one 3.7× and 4.0× their width, respectively, penultimate one 3.8× longer than wide. Eye distinctly setose, length of eye 1.4× length of temple in dorsal view, temple parallel-sided behind eyes, posteriorly roundly narrowed, temple, vertex and frons smooth, face nearly smooth, convex medially, its width as long as height, strongly narrowed submedially, minimum distance between eyes less than distance between outer margins of antennal sockets. Intertentorial distance / tentorial distance = 6.5. Clypeus narrow, its width 3.1× height, ventral margin weakly concave medially. Length of malar space 0.55× basal width of mandible. Maxillary palp with 5 segments, about as long as height of head, fourth segment the longest, slightly longer than fifth segment. Occipital carina complete and distinct, joining hypostomal carina ventrally. OOL / OD = 3.4. POL / OD = 1.4. Length of posterior side of stemmaticum as long as its lateral side.

Mesosoma (Fig. 8D, G). Mesosoma length 1.7× height. Side of pronotum antero-ventrally rugose, remainder largely smooth. Prosternum rugose. Mesoscutum protruding anteriorly, areolate-rugose postero-medially with weak longitudinal carina, remainder largely smooth, notauli shallow. Scutellar suture with six carinae. Scutellum smooth and weakly convex. Mesopleuron smooth posterodorsally, remainder largely areolate-rugose, precoxal sulcus indistinct. Mesosternum rugose medially, remainder smooth. Metapleuron areolate-rugose. Propodeum areolate-rugose, postero-medially concave, and latero-posteriorly distinctly protruding.

Wings (Fig. 8H, I). Fore wing 2.1 mm in length, 1-R1 / pterostigmal length = 0.6, pterostigmal length 2.4× width. veins 2-SR and SR1 united basally and issuing from pterostigma and 2-SR incomplete, vein M+CU1 sclerotized, vein 1-SR+M present, vein m-cu absent, veins 2-CU1, 3-CU1, 2-1A and CU1a unsclerotized. Hind wing with long setae in posterior margin, vein 1-SC+R absent.

Legs. Hind leg: coxa distinctly rugose, femur 4.1× longer than wide, length of outer and inner tibial spurs 0.2× and 0.3× hind basitarsus, respectively.

Metasoma (Fig. 8J). First metasomal tergite longitudinally rugose in apical 1/2, smooth in basal 1/2, with a longitudinal carina, ventrally open, its length 2.7× apical width, spiracle (right spiracle abnormally weak) protruding and situated slightly anterior to half, dorsope and laterope absent. Following tergites smooth and shining. Hypopygium glabrous. Ovipositor sheath with sparse setae, its length 0.29× forewing.

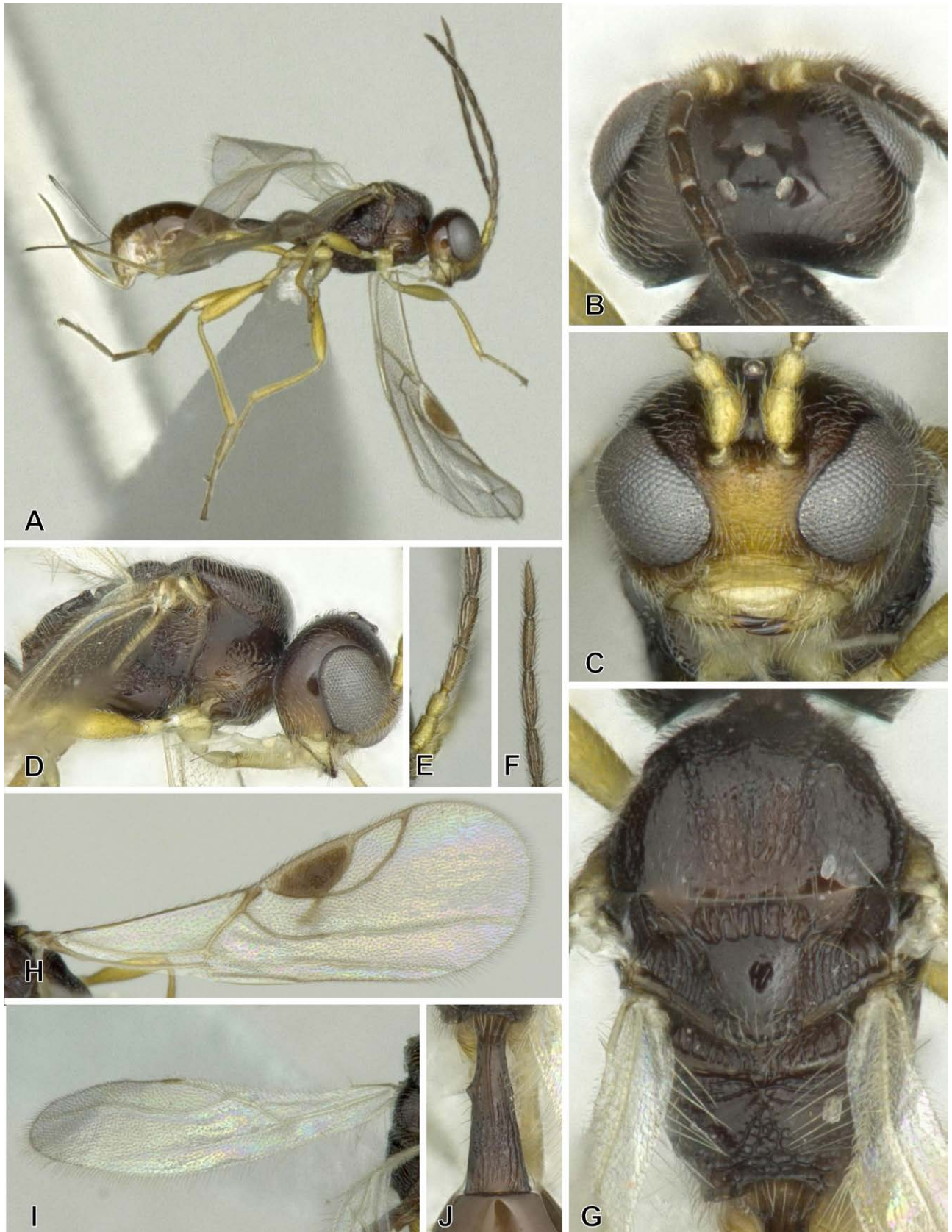


Fig. 8. *Cryptoxilos hiemalis* sp. nov., female, holotype. — A, Habitus, lateral view; B, head, dorsal view; C, head, frontal view; D, head and mesosoma, lateral view; E, basal antennal segments; F, apical antennal segments; G, mesosoma, dorsal view; H, fore wing; I, hind wing; J, first metasomal tergite, dorsal view.

Ovipositor slightly curved in S-shape.

Color. Reddish brown to dark brown, face, clypeus,

palpi, mandible except for apical part, tegulae, legs, sternites, hypopygium and ovipositor yellow to yellowish brown,

antenna brown, basal 3 segments paler, wing hyaline pterostigma brown, pale basally and apically, veins brown to light brown, vein 2-SR of fore wing with small brownish pigmentation.

Male. Unknown.

Distribution. Japan.

Distribution within Japan. Yaku-shima Is.

Hosts. Unknown.

Remarks. This species is closely resembling an Eastern Palaearctic species, *C. pallipes* Chen, He, van Achterberg & Ma, but differs in having the comparatively long 4th antennal segment (longer than 3rd segment and its length 4.0× width in *hiemalis*, shorter than 3rd segment and its length 3.3× width in *pallipes*) (Fig. 11E), the strongly narrowed face (the minimum distance between eyes less than distance between outer margins of antennal sockets in *hiemalis*, while about equal in *pallipes*) (Fig. 11C), the ventral margin of clypeus weakly concave (straight in *pallipes*) (Fig. 11C), the slender first metasomal tergite (its length 2.7× apical width in *hiemalis*, while 1.8× in *pallipes*) (Fig. 11J).

Chen *et al.* (2001) proposed two subgenera of *Cryptoxylos*: *Cryptoxylos* Viereck and *Cryptoxyloides* Capek & Capecki, based on differences in the length of vein 1-R1 of fore wing and the face width. However, this new species seems to have intermediate states for the both characters. Therefore, the definition of subgenera needs to be revised when sufficient material has been accumulated.

Genus *Dinocampus* Foerster

Dinocampus Foerster, 1862. Type. *Bracon terminatus* Nees 1811 (1812).

Diagnosis. Maxillary palp with 5 segments; length of scapus 2.2–2.6× width, about as long as third antennal segment; occipital carina complete, ventrally joining hypostomal carina; notauli present; median lobe of mesoscutum entirely densely setose; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent; vein 1-R1 of fore wing distinctly shorter than distance from apex of marginal cell to apex of wing; first metasomal tergite petiolate and distinctly widened apically, coarsely rugulose-reticulate; dorsope and laterope absent; ovipositor and ovipositor sheath slender, straight.

Distribution. Afrotropical, Australasian, Nearctic, Neotropical, Oceanic, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of adult Coccinellidae (Coleoptera). Chrysomelidae and Curculionidae are also known as its hosts in a few cases (Yu *et al.*, 2016).

Japanese species. One species, *Dinocampus coccinellae* (Schrank), has been recorded from Japan.

Dinocampus coccinellae (Schrank) (Fig. 9A–D)

Ichneumon coccinellae Schrank, 1802: 310. Type. sex unknown, from Netherlands in RMNH.

Bracon terminatus Nees, 1811. Syn. by Cushman (1922).

Perilitus coccinellae (Schrank, 1802). Transferred by Muesebeck (1936).

Dinocampus coccinellae (Schrank, 1802). Transferred by Shenefelt (1969).

Distribution. China, Japan, Korea, Russian Far East, Taiwan; Afrotropical, Australasian, Nearctic, Neotropical, Oceanic, Oriental, and Palaearctic regions.

Distribution within Japan. *Hokkaidô; Honshû: Saitama Pref., Kanagawa Pref., Shizuoka Pref., *Aichi Pref., *Ôsaka Pref., Hyôgo Pref.; Shikoku: *Kagawa Pref., *Tokushima Pref., Ehime Pref.; Kyûshû: *Fukuoka Pref. (Watanabe, 1937; Kotani, 1980; Nambu, 2000; Nagase, 2004; Nagase & Watanabe, 2018; present study).

Hosts. In Japan, *Harmonia axyridis* (Coccinellidae) (Watanabe, 1937) and *Coccinella septempunctata* (Coccinellidae) (present study). Chrysomelidae, Coccinellidae (*Adalia*, *Anatis*, *Brachiacantha*, *Calvia*, *Cheilomenes*, *Coccinella*, *Coelophora biplagiata*, *Coleomegilla*, *Cycloneda*, *Eriopis*, *Exochomus*, *Halyzia*, *Harmonia*, *Hippodamia*, *Illeis*, *Macronaemia*, *Menochilus*, *Micraspis*, *Myzia*, *Olla*, *Propylaea*, *Subcoccinella*, *Tytthaspis*), and Curculionidae (*Sitona*) are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Hokkaidô, Nakashibetsu Town, Narabigaoka, 28.V–11.VII.2018 (MsT.), C. Nakata & M. Takada leg. (OMNH); 6♀♀, Aichi Pref., Fujioka Town, emerged on 17.II–2.III.1998, collector unknown (OMNH); 4♀♀, Ôsaka Pref., Kawachinagano City, Oyamadachô, collected as a host adult of *Coccinella septempunctata* on 15.III.2018, M. Aoshima leg. (OMNH); 1♀, Ôsaka Pref., Kawachinagano City, Oyamadachô, 7.XI.2018, S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Sanda City, Hirono, 34°56'28"N / 135°11'24"E, alt. 160 m, 19.IV.2012, M. Itô leg. (OMNH); 1♀, Hyôgo Pref., Kôbe City, Mt. Rokkô-san, alt. 900–930 m, 9.VI.2022, S. Fujie leg. (OMNH); 1♀, Kagawa Pref., Takamatsu City, collected as a host adult of *Coccinella septempunctata* on 26.VI.1960, cocoon formed on 26.VI.1960, emerged on 4.VII.1960, Y. Miyatake leg. (MUNJ); 1♀, Tokushima Pref., Zennyûji-toh, 28.IV–2.V.2003 (MsT.), H. Ohara leg. (MUNJ); 1♀, Fukuoka Pref., Fukuoka City, Nishi Ward, Iiji, 33.5703N / 130.2458E, 18.IV.2020, Y. Hisasue leg. (ELKU); 1♀, Fukuoka Pref., Fukuoka City, Sawara Ward, Higashiirube, Muromi-gawa River (riverside), 33.5117N / 130.3350E, 1.IV.2021, Y. Hisasue leg. (ELKU); 1♀, Fukuoka Pref., Itoshima City, Tomari, 33.578N / 130.219E, alt. 10 m, 3.IV.2021, K. Nishiya leg. (ELKU).

Genus *Elasmosoma* Ruthe

Elasmosoma Ruthe, 1858. Type. *Elasmosoma berolinense* Ruthe, 1858.

Diagnosis. Antennal segments of female 13 and of male 14; maxillary palp with 2 segments; occipital carina absent; notauli absent; tarsal claws simple; arolium of female much longer than claw; Marginal cell of forewing with additional cell; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing present; vein cu-a of

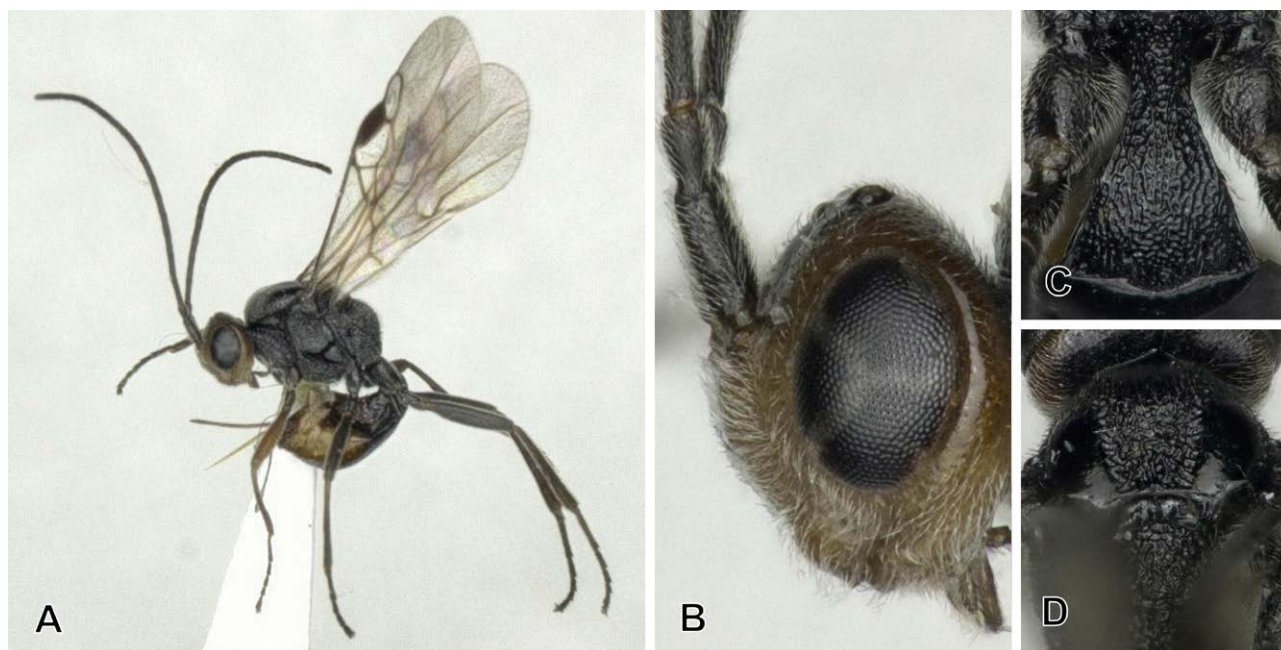


Fig. 9. *Dinocampus coccinellae* (Schränk), ♀, from Hokkaidô Prefecture. — A, Habitus, lateral view; B, head, lateral view; C, mesonotum, dorsal view, D, first metasomal tergite, dorsal view.

fore wing strongly reclivous; hind trochantellus obsolescent; first metasomal tergite sessile; dorsope and laterope absent; ovipositor compressed laterally, down-curved; ovipositor sheath small, short.

Distribution. Nearctic, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of adult Formicidae (Hymenoptera) (Yu *et al.*, 2016).

Japanese species. One species, *Elasmosoma trichopygidium* Belokobylskij, has been recorded from Japan.

***Elasmosoma trichopygidium* Belokobylskij**
(Fig. 10A–D)

Elasmosoma trichopygidium Belokobylskij, 2000. Type. ♀, from Japan in NARO.

Elasmosoma berolinense: Watanabe, 1935; 1937 (misidentified).

Distribution. Japan.

Distribution within Japan. Hokkaidô; Honshû: Ibaraki Pref., *Chiba Pref., Gifu Pref., Aichi Pref., *Ishikawa Pref., Kyôto Pref., *Ôsaka Pref., *Hyôgo Pref. (Watanabe, 1935; 1937; Belokobylskij, 2000b; present study).

Hosts. *Formica japonica* (Formicidae) in Japan (Watanabe, 1935).

Examined material. 1♀, Chiba Pref., Kamogawa City, Higashi-chô, 21.VI.2020, S. Endô leg. (OMNH); 8♀♀4♂♂, Ishikawa Pref., Hakusan City, Yawata, 24–30.VI.2009 (MsT.), H. Fukutomi leg. (MUNJ); 2♀♀, same locality and collector, 10–16.V.2009 (MsT.) (MUNJ); 3♀♀, same locality and collector, 21–27.V.2009 (MsT.) (MUNJ); 1♂, same locality and collector, 7–13.VI.2009 (MsT.) (MUNJ); 3♂♂, same locality and collector, 19–25.VII.2009 (MsT.) (MUNJ); 1♀, Kyôto Pref., Botanical garden, 7.V.1933, T. Kani leg. (EIHU); 1♀, Ôsaka Pref., Ôsaka City, Chûô Ward, Ôsakajô Park, collected near a nest of *Formica japonica*, 27.V.2018, T. Takeuchi

leg. (OMNH); 1♀, same locality and collector, 16.VI.2018 (OMNH); 1♀, same locality and collector, 17.VI.2018 (OMNH); 9♀♀2♂♂, same locality, 22.VI.2019, S. Fujie leg. (5♀♀2♂♂ in OMNH, 2♀♀ in KPMNH and 2♀♀ in ELKU); 2♀♀, Hyôgo Pref., Kôbe City, Nada Ward, Nadamaruyama Park, 23.VI.2019, M. & S. Fujie leg. (OMNH).

Remarks. Belokobylskij (2000g) reported that the specimen from Hokkaidô identified as *E. berolinense* was a misidentification of *E. trichopygidium*. We also examined a specimen of *E. berolinense* sensu Watanabe (1935; 1937) from Kyôto Prefecture in EIHU, proved to be *E. trichopygidium*.

Genus *Euphorus* Nees

Euphorus Nees, 1834. Type. *Euphorus pallicornis* Nees, 1834.

Diagnosis. Maxillary palp with 5 segments; length of scape not longer than third antennal segment; occipital carina usually widely reduced medio-dorsally and ventrally remaining widely separated from hypostomal carina; notauli absent, but occasionally present; postpectal carina absent; tarsal claws simple; vein M+CU1 of fore wing unsclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent; first metasomal tergite petiolate, subparallel or parallel-sided, open ventrally; dorsope occasionally present; laterope absent; ovipositor slender, distinctly down-curved; ovipositor sheath short.

Distribution. Nearctic, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of nymph and adult Caeciliidae, Elipsocidae, Mesopsocidae, Peripsocidae, Psocidae (Psocoidea) and adult Chrysomelidae (Coleoptera) (Yu *et al.*, 2016).

Japanese species. One species, *Euphorus clypearis* (Tobias), has been recorded from Japan. Numerous Japanese specimens of the genus have not been identified yet.



Fig. 10. *Elasmosoma trichopygidium* Belokobylskij, female, from Ôsaka Prefecture (A, B) and Ishikawa Prefecture (C, D). — A, Habitus, lateral view; B, basal segments of middle leg; C, wings; D, mesosoma and metasoma, dorsal view.

Euphorus clypearis (Tobias)

Leiophron clypearis Tobias, 1986. Type. ♂, from Russia in ZISP.

Distribution. Japan, Korea, Russia; Western Palearctic region.

Distribution within Japan. Kyûshû (no further location was indicated by Belokobylskij (2000g)).

Genus *Holdawayella* Loan

Holdawayella Loan, 1967. Type. *Holdawayella tingiphaga* Loan, 1967.

Ussraridelus Tobias & Belokobylskij, 1981. Type. *Ussraridelus minutus* Tobias & Belokobylskij, 1981. Syn. by Stigenberg *et al.* (2015).

Diagnosis. Antennal segments 18, filiform; maxillary palp with 6 segments; apical antennal segment without an apical

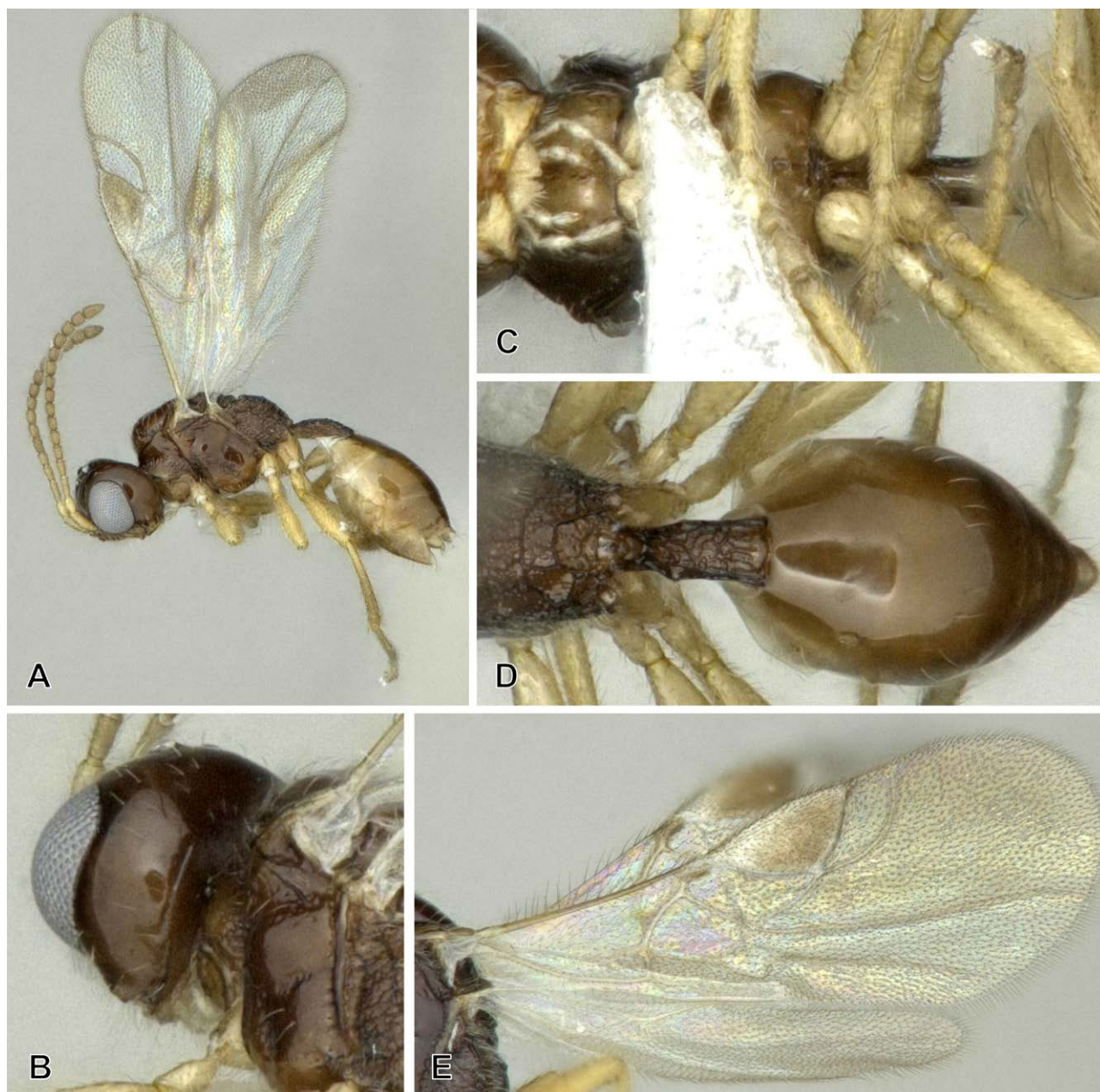


Fig. 11. *Euphorus* sp., females, from Yakushima Is. — A, Habitus, lateral view; B, head, latero-posterior view; C, mesosoma and first metasomal tergite, ventral view; D, metasoma, dorsal view; E, wings.

spine; occipital carina absent; mesosoma entirely areolate; notauli present, but indistinct; vein M+CU1 of fore wing unsclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent; first metasomal tergite petiolate, nearly parallel-sided, fused ventrally; laterope and dorsope absent; ovipositor and its sheath shortly exposed.

Distribution. Nearctic, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of Tingidae (Hemiptera) (Yu *et al.*, 2016).

Japanese species. One species, *Holdawayella minutus* (Tobias & Belokobylskij), has been recorded from Japan.

***Holdawayella minutus* (Tobias & Belokobylskij)**
(Fig. 12A–C)

Ussraridelus minutus Tobias & Belokobylskij, 1981. Type. ♂, from Russia in ZISP.

Holdawayella minutus (Tobias & Belokobylskij, 1981). Transferred by Stigenberg *et al.* (2015).

Ussuraridelus yaoae Chen & van Achterberg, 1997. Syn. by Belokobylskij (2000g).

Distribution. China, Japan, Russia.

Distribution within Japan. Honshû: *Nagano Pref. (present study). Belokobylskij (2000g) recorded this species from Honshû, but no further location was indicated.

Examined material. Honshû: 1♂, Nagano Pref., Shigakôgen, VII.1967 (NARO).

Genus *Leiophron* Nees

Leiophron Nees, 1818: 303. Type. *Leiophron apicalis* Haliday, 1833.

Euphoriana Gahan, 1913. Type. *Euphonana uniformis* Gahan, 1913. Syn. by Loan (1974).

Euphoriella Ashmead, 1900. Type. *Labeo incertus* Ashmead, 1887. Syn. by Belokobylskij (2000g).

Diagnosis. Maxillary palp with 5 segments; length of scape occasionally longer than third antennal segment; occipital carina reduced medio-dorsally and fused with hypostomal carina ventrally; notauli absent; postpectal carina distinct; tarsal claws simple; vein M+CU1 of fore wing unsclerotized; vein 1-SR+M of fore wing present or absent; vein r-m of fore wing absent; first metasomal tergite petiolate, subparallel or parallel-sided, ventrally variable; dorsope and laterope absent; ovipositor slender, distinctly down-curved; ovipositor sheath short.

Distribution. Afrotropical, Nearctic, Neotropical, Oceanic, Oriental, and Palearctic regions.

Bionomics. Parasitoids of Diptera (Chloropidae), Hemiptera (Cicadellidae, Lygaeidae, Miridae.), Hymenoptera (Formicidae), and Psocoptera (Lachesillidae, Peripsocidae, Psocidae) (Yu *et al.*, 2016). The host records of Diptera and Hymenoptera need to be verified.

Japanese species. One species, *Leiophron yankovskii* Belokobylskij, has been recorded from Japan. Several unidentified species remain in Japanese materials.

Leiophron yankovskii Belokobylskij

Leiophron (Leiophron) yankovskii Belokobylskij, 1993. Type. ♀, from Russia in ZISP.

Distribution. Japan, Russia.

Distribution within Japan. Kyūshū (no further location was indicated by Belokobylskij (2000g)).

Genus *Mama* Belokobylskij

Mama Belokobylskij, 2000. Type. *Mama mariae* Belokobylskij, 2000.

Diagnosis. Maxillary palp with 5 segments; length of scape longer than third antennal segment; occipital carina reduced medio-dorsally and fused with hypostomal carina ventrally; notauli present; fifth segment of fore tarsus strongly enlarged, about twice as wide as strongly shortened first to fourth segments; tarsal claws simple; vein M+CU1 of fore wing unsclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent; first metasomal tergite petiolate, widened towards apex, open ventrally; dorsope and laterope absent; ovipositor straight, directed up; ovipositor sheath short.

Distribution. Eastern Palearctic region.

Bionomics. Hosts unknown.

Japanese species. One species, *Mama mariae* Belokobylskij, has been recorded from Japan.

Mama mariae Belokobylskij

(Fig. 14B–D)

Mama mariae Belokobylskij, 2000. Type. ♀, from Russia in ZISP.

Distribution. Japan, Russian Far East.

Distribution within Japan. Honshū; Kyūshū: *Ōita Pref. (present study). Belokobylskij (2000g) recorded this species from Honshū, but no further location was indicated.

Examined material. 1 ♀, Ōita Pref., Mts. Kujū, Mt. Kurodake, 17.V.1982, H. Takemoto leg. (NARO).

Genus *Marshiella* Shaw

Marshiella Shaw, 1985. Type. *Streblocera pulvilicornis* Walley & MacKay, 1963.

Diagnosis. Maxillary palp with 4 segments; Length of scape about as long as third antennal segment; third to sixth antennal segment flattened, densely setose; occipital carina complete, separated from hypostomal carina ventrally; occipital carina complete, ventrally joining hypostomal carina; notauli present; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing absent; vein r-m of fore wing absent; first metasomal tergite petiolate and widened apically, closed ventrally at basal half; dorsope and laterope absent; ovipositor and ovipositor sheath slender, straight.

Distribution. Nearctic, Neopropical, Oriental, and

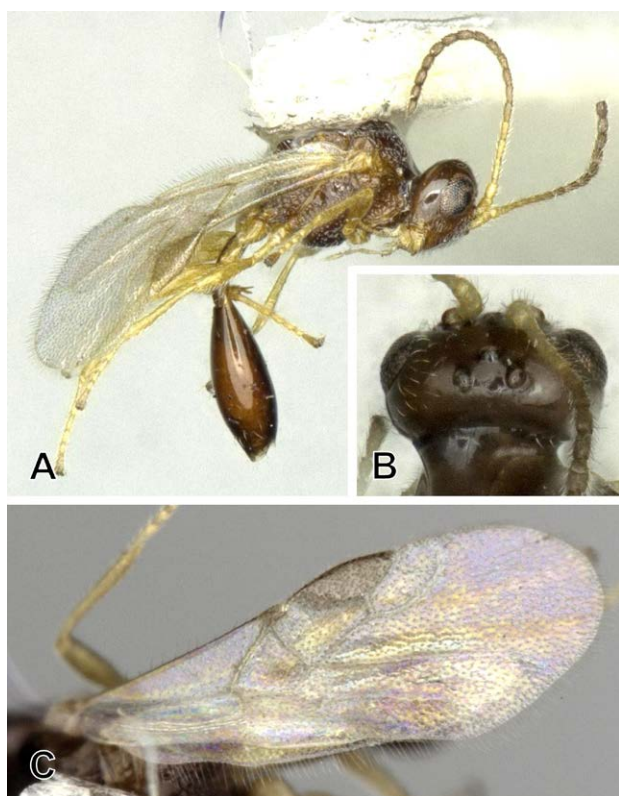


Fig. 12. *Holdawayella minutus* (Tobias & Belokobylskij), females, from Nagano Prefecture. — A, Habitus, lateral view; B, head, dorsal view; C, fore wing.

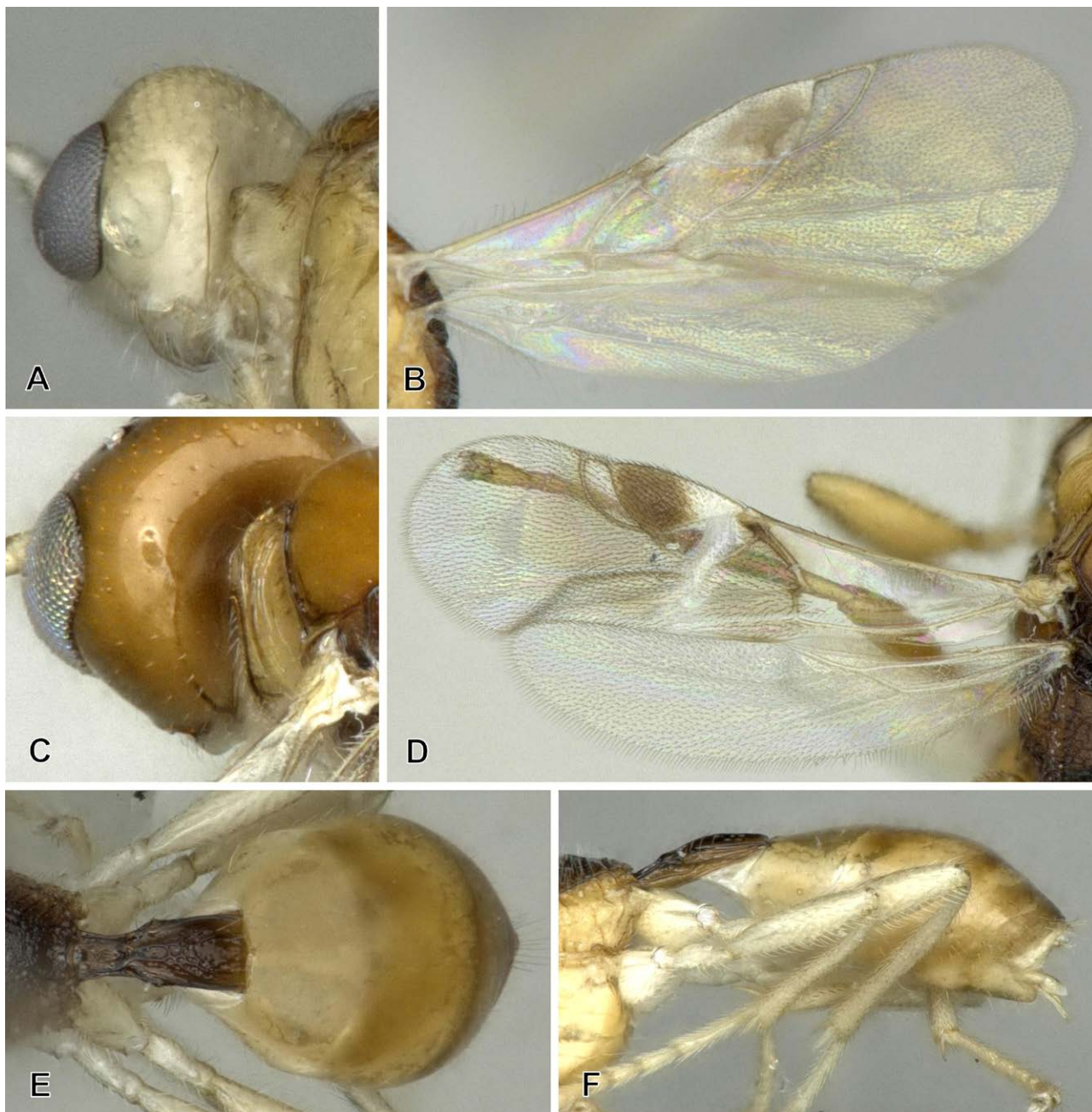


Fig. 13. *Leiothron* sp., female, from Aichi Prefecture (A, B, E, F). *Leiothron* sp., female, from Aichi Prefecture (C, D). — A, C, Head, latero-posterior view; B, D, wings; E, metasoma, dorsal view; F, metasoma, lateral view.

Palearctic regions.

Bionomics. Parasitoids of adult Anthicidae (Coleoptera) (Yu *et al.*, 2016).

Japanese species. One species, *Marshiella aichiensis* Belokobylskij, has been recorded from Japan.

Marshiella aichiensis Belokobylskij
(Fig. 16E)

Marshiella aichiensis Belokobylskij, 2000. Type. ♀, from Japan in NARO.

Distribution. Japan.

Distribution within Japan. Honshū: Aichi Pref.; Kyūshū: Fukuoka Pref. (Belokobylskij, 2000c; present study).

Examined material. 1♀, Aichi Pref., Kasugai City, Takagi (weed land), 22–28.VI.1994 (EmT.), K. Sanda leg. (MUNJ); 2♀♀, same locality and collector, 6–12.VII.1994 (EmT.), (MUNJ).

Genus *Meteorus* Haliday

Meteorus Haliday, 1835 (as subgenus of *Perilitus*). Type. *Ichneumon pendulator* Latreille, 1799. *Saprotichus* Holmgren, 1868. Type. *Saprotichus chinensis* Holmgren, 1868. Syn. by Szépligeti (1904).

Diagnosis. Maxillary palp with 6 segments; apical antennal segment without an apical spine; occipital carina complete or reduced medio-dorsally, ventrally joining

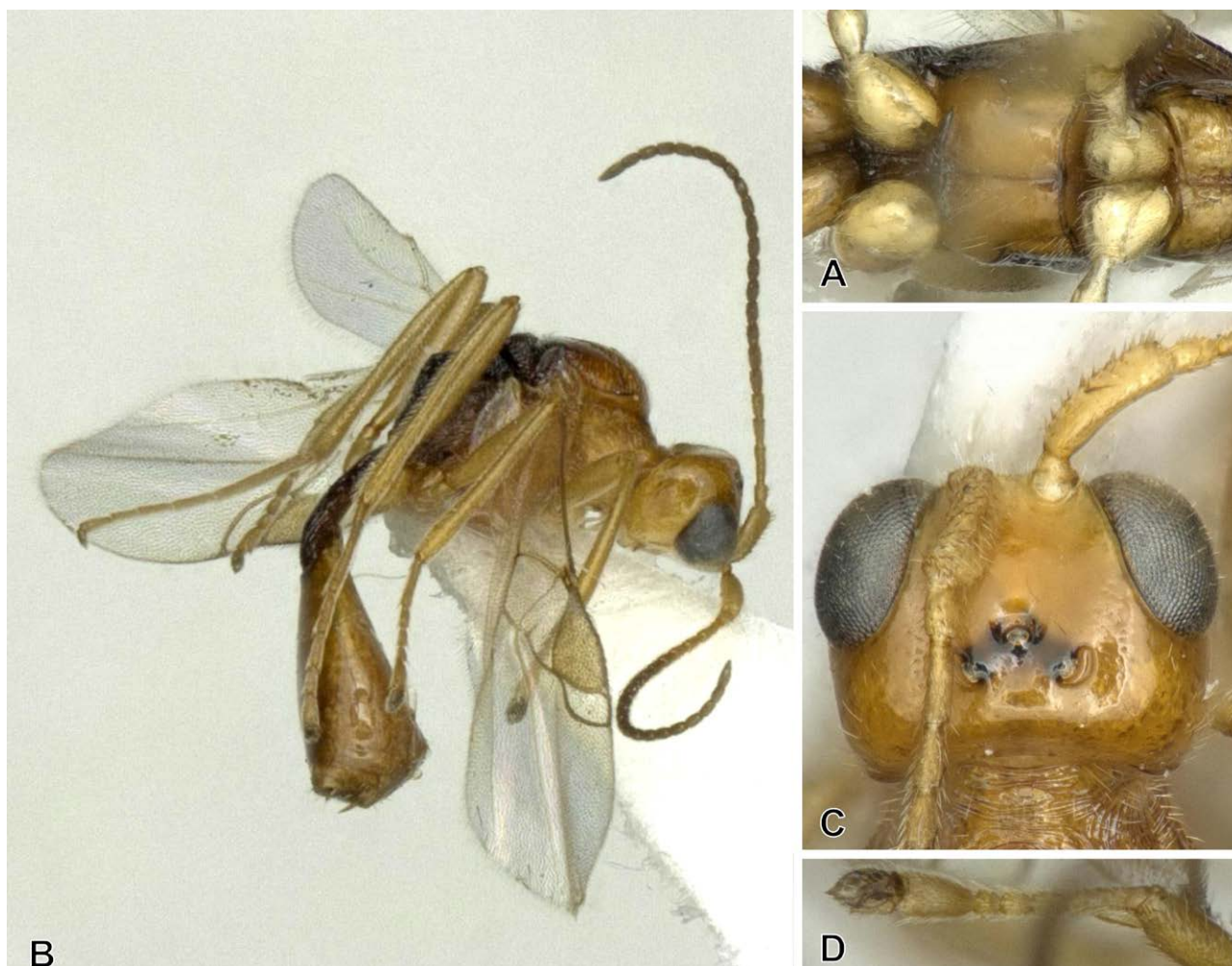


Fig. 14. *Leiophron* sp., female, from Ishikawa Prefecture (A); *Mama mariae* Belokobylskij, female, from Ôita Prefecture (B–D). — A, Mesosternum, ventral view; B, habitus, lateral view; C, scape, head and mesonotum, dorsal view; D, fore tarsus, dorsal view.

hypostomal carina; notauli distinctly present; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing present; first metasomal tergite petiolate and sometimes fused ventrally; Fourth and fifth tergites of ♀ largely glabrous, with a single row of hairs, rarely in ♂ rather setose; laterope and dorsope often present; ovipositor and ovipositor sheath slender, straight or weakly down-curved.

Distribution. Cosmopolitan.

Bionomics. Solitary or gregarious koinobiont endoparasitoids of larval Lepidoptera and Coleoptera (Huddleston, 1980; Stigenberg & Ronquist, 2011; Yu *et al.*, 2016). Host records of Diptera and Hymenoptera (Yu *et al.*, 2016) should be verified.

Japanese species. Maeto (1986b; 1988a; 1988b; 1989a; 1989b; 1990) and Stigenberg & Ronquist (2011) recorded 42 species and one species from Japan, respectively. Here we report one additional species, and totally 44 species of the genus are known from Japan.

Meteorus acutus Maeto

Meteorus acutus Maeto, 1988. Type. ♀, from Japan in ELKU.

Distribution. Japan, Korea.

Distribution within Japan. Honshû: *Yamagata Pref., Nagano Pref., *Ishikawa Pref.; Kyûshû: Kumamoto Pref.; *Yaku-shima Is. (Maeto, 1988b; present study).

Examined material. 1♀, Yamagata Pref., Iide Town, Soegawa, alt. ca. 290 m, 16–30.VI.2015 (MsT.), Y. Okatsu & S. Shimizu leg. (OMNH); 1♀, Ishikawa Pref., Kaga City, Mt. Kariyasu-yama, 31.V–19.VI.2002 (MsT.), K. Esaki leg. (OMNH); 1♀, Yaku-shima Is., Arakawa, alt. 1200 m, 28.VI–29.VII.2007 (MsT.), T. Yamauchi *et al.* leg. (KPMNH).

Meteorus angustatus Maeto

Meteorus angustatus Maeto, 1988. Type. ♀, from Japan in ELKU.

Distribution. China, Japan, Korea, Russian Far East.

Distribution within Japan. *Hokkaidô; Honshû: Niigata Pref., *Yamanashi Pref., *Nagano Pref., *Nara Pref., *Hyôgo Pref., *Tottori Pref.; Shikoku: *Tokushima Pref., Kyûshû: Fukuoka Pref., Kumamoto Pref. (Maeto, 1988a; Fujie & Shimizu, 2015; present study).

Examined material. 1♀, Hokkaidô, Sapporo City, Hitsujigaoka, 1–8.VIII.2011 (MsT.), K. Konishi leg. (OMNH); 1♀, same locality and collector, 43°00'11"N / 141°24'55"E,

22–29.VIII.2011 (MsT.), K. Konishi leg. (OMNH); 1♀, Yamanashi Pref., Nirasaki City, Marunomachi, 20.VII–1.VIII.2007 (MsT.), K. Hosoda leg. (OMNH); 1♂, Nagano Pref., Ueda City, Sugadaira-kôgen, Tsukuba Univ., alt. ca. 1320 m, 9.IX.2013, S. Shimizu leg. (OMNH); 2♀♀, Nagano Pref., Outaki Vil., Mt. Ontake-san, Tanohara, 8.VIII.2007, K. Watanabe leg. (KPMNH); 1♀1♂, same locality and collector, 9.VIII.2007 (KPMNH); 1♀, Nara Pref., Tenkawa Vil., Kitozumi, 34.19N / 135.93E, 16.VII.2016, S. Fujie leg. (OMNH); 2♀♀, Nara Pref., Totsukawa Vil., Mt. Shakagatake, 26.VII–24.VIII.2014 (MsT.), T. Hirooka & S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Kami Town, Niiya, 35.3959N / 134.5169 E, 31.VII.2016, R. Matsumoto leg. (OMNH); 1♀, Tottori Pref., Yazu Town, Himeji, Mt. Ouginosen, 15.VIII.2020 (LT.), S. Fujie leg. (OMNH); 1♀, Tokushima Pref., Miyoshi City, Higashiyasugeoi, Mt. Tsurugi-san, alt. 1440 m, 33.870163N / 134.080078E, 2–3.VIII.2019 (LT.), S. Shimizu & J. Okayasu leg. (OMNH).

Meteorus breviantennatus Tobias

Meteorus breviantennatus Tobias, 1986. Type. ♀, from Russia in ZISP.

Distribution. Japan, Russian Far East; Palaearctic region.

Distribution within Japan. Hokkaidô (present study). Stigenberg & Ronquist (2011) recorded this species from Japan, but no further location was indicated.

Examined material. 1♀, Hokkaidô, Sapporo City, Hitsujigaoka, 27.VI–4.VII.2011 (MsT.), K. Konishi leg. (OMNH).

Meteorus camptolomae Watanabe

Meteorus camptolomae Watanabe, 1939. Type. ♀, from Japan in EIHU.

Distribution. Japan, Korea.

Distribution within Japan. Honshû: Tôkyô Pref., Nagano Pref., *Hyôgo Pref., Hiroshima Pref. (Watanabe, 1939; Maeto, 1989b; Maeto & Nakamura, 1995; present study).

Hosts. *Camptoloma interiorata* (Nolidae) in Japan (Watanabe, 1939).

Examined material. 1♀, Hyôgo Pref., Kasai City, Uzuranochô, Farm of Kôbe Univ., 29.IV.2011, S. Fujie leg. (OMNH).

Meteorus cespitator Thunberg

Ichneumon cespitator Thunberg, 1822. Type. ♀, from Sweden in UDE.

Distribution. China, Japan, Russian Far East; Ocenic and Palaearctic regions.

Distribution within Japan. Hokkaidô; Honshû: *Toyama Pref.; Kyûshû: Fukuoka Pref. (Maeto, 1988a; present study).

Hosts. No host records are available in Japan, while Coleoptera: Cerambycidae (*Rhagium*), Ciidae (*Cis*), Melandryidae (*Orchesia*) and Lepidoptera: Gelechiidae

(*Oecocercis*), Notodontidae (*Cerura*), Tineidae (*Monopis*, *Nemapogon*, *Tinea*, *Tineola*, *Trichophaga*) are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Toyama Pref., Toyama City, 10.IX–6.X.2012 (LT.), T. Sumino leg. (OMNH).

Meteorus cincitellus Spinola

Bracon cincitellus Spinola, 1808. Type. ♂, from Italy in MZS.

Distribution. China, Japan, Korea, Russian Far East; Oceanic, Oriental, and Palaearctic regions.

Distribution within Japan. Hokkaidô; Honshû: *Gunma Pref., Nagano Pref., Yamanashi Pref., *Fukui Pref. (Maeto, 1989a; present study).

Hosts. No host records are available in Japan, while Geometriidae, Lymantridae, Noctuidae, Pyralidae, and Tortricidae are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Hokkaidô, Sapporo City, Hitsujigaoka, 21–28.VII–4.VIII.2006 (MsT.), K. Konishi leg. (OMNH); 1♂, Gunma Pref., Katashina Vil., Marunuma, Yuzawa, alt. 1,440–1,560 m, S. Yoshizawa leg. (OMNH); 2♀♀, Nagano Pref., Kawakami Vil., Azusayama, 5.IX.2015, M. Itô leg. (OMNH); 4♀♀, Nagano Pref., Outaki Vil., Mt. Ontake-san, 35°52'15"N / 137°31'22"E, alt. ca. 1,840 m, 13–25.VI.2015, (MsT.), S. Shimizu leg. (OMNH); 1♀, Fukui Pref., Ooi Town, Natashô-notaoi, 17.VII.2021, S. Fujie leg. (OMNH).

Meteorus cis (Bouché)

Bracon cis Bouché, 1834. Type material unknown.

Perilitus profligator Haliday, 1835. Syn. by Fahringer (1928).

Distribution. China, Japan, Korea, Russian Far East; Western Palaearctic region.

Distribution within Japan. *Hokkaidô; Honshû: *Yamanashi Pref., Nagano Pref., *Nara Pref.; Kyûshû: Fukuoka Pref. (Maeto, 1988a; present study).

Hosts. No host records are available in Japan, while Ciidae (*Cis*) are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Hokkaidô, Sapporo City, Hitsujigaoka, 25.VII–1.VIII.2011 (MsT.), K. Konishi leg. (OMNH); 1♀, same locality and collector, 1–8.VIII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 15–22.VIII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 29.VIII–5.IX.2011 (MsT.) (OMNH); 1♀, Yamanashi Pref., Nirasaki City, Marunomachi, 20.VII–1.VIII.2007 (MsT.), K. Hosoda leg. (OMNH); 1♀, Nara Pref., Totsukawa Vil., Mt. Shakagatake, 31.V.2014, S. Fujie leg. (OMNH).

Meteorus colon (Haliday)

Perilitus colon Haliday, 1835. Type. ♀, from Ireland, lost.

Meteorus pallidus Ruthe, 1862. Syn. by Belokobylskij *et al.* (2003).

Distribution. China, Japan, Russian Far East; Palaearctic region.

Distribution within Japan. Hokkaidô; Honshû: *Akita

Pref., Nagano Pref., *Gifu Pref., Hiroshima Pref.; Kyūshū: Ōita Pref.; Okinawa-hontō Is. (Maeto, 1989a, Maeto & Nakamura, 1995; present study).

Hosts. No host records are available in Japan, while Arctiidae, Geometridae, Lymantriidae, Noctuidae, Nolidae, Pyralidae, Saturniidae, and Tortricidae are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♂, Hokkaidō, Horokanai Town, Moshiri, 44°22'03"N / 142°18'18"E, alt. 430 m, 11.VII.2012 (LT.), M. Itō leg. (OMNH); 1♀1♂, Hokkaidō, Yūbari City, Brooklet Near Noborikawa tunnel, 42.919N / 142.116E, 23.VII–5.VIII.2007, N. Kuhara leg. (OMNH); 24♀♀2♂♂, Hokkaidō, Kuriyama Town, Takinoshita, 16.VII–5.VIII.2009 (MsT.), A. Ueda leg. (OMNH); 1♀, Hokkaidō, Sapporo City, Hitsujigaoka, 29.VIII–5.IX.2012 (MsT.), K. Konishi leg. (OMNH); 1♀, Akita Pref., Senboku City, Nyūtō Spa, alt. 680 m, 39.7980N / 140.7776E, 13.VIII.2015 (LT.), S. Fujie leg. (OMNH); 1♀, Nagano Pref., Outaki Vil., Mt. Ontakesan, Hakkaisan, 31.VII.2013, S. Fujie leg. (OMNH); 1♀, Gifu Pref., Takayama City, Migimata-rindō to Takidani, 3.VIII.2013, S. Fujie leg. (OMNH); 1♀, Okinawa-hontō Is., Kunigami Vil., Yona, 27.VI.2013, S. Fujie leg. (OMNH); 1♀, Okinawa-hontō Is., Kunigami Vil., Jashiki, 6.V.2019, S. Shimizu leg. (OMNH); 1♀1♂, Okinawa-hontō Is., Kunigami Vil., Okuyona-rindō, 26.819051N / 128.282032E, alt. 10–130 m, 1.IV.2019, S. Shimizu leg. (OMNH).

Meteorus corax Marshall

Meteorus corax Marshall, 1898. Type. ♀, from Switzerland in NMB.

Meteorus pospelowi Telenga, 1950. Syn. by Tobias (1976).

Distribution. Japan, Korea, Russian Far East; Palaearctic region.

Distribution within Japan. Hokkaidō; Honshū: Aomori Pref., *Yamagata Pref., *Miyagi Pref., Tochigi Pref., Niigata Pref., Nagano Pref., Tōkyō Pref., *Kanagawa Pref., Yamanashi Pref., Shizuoka Pref., *Toyama Pref., *Ishikawa Pref., *Fukui Pref., *Shiga Pref., *Mie Pref., *Kyōto Pref., *Nara Pref., *Wakayama Pref., *Ōsaka Pref., Hyōgo Pref., Tottori Pref., Hiroshima Pref., Shimane Pref.; Shikoku: Tokushima Pref., Ehime Pref., *Kōchi Pref.; Kyūshū: Fukuoka Pref., Kumamoto Pref., Miyazaki Pref. (Maeto, 1986b; Maeto & Nakamura, 1995; Konishi & Maeto, 2000; Fujie & Shimizu, 2015; Katayama & Fujie, 2017; present study).

Hosts. *Xenicotela pardalina*, *Olenecamptus formosanus*, and *Glenea relictica* (Cerambycidae) in Japan (Maeto, 1986b). Other Cerambycidae and Pyralidae are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Hokkaidō, Akkeshi Town, Aikappu, 3.VIII.2013, R. Matsumoto leg. (OMNH); 1♀, Hokkaidō, Yūbari City, Brooklet Near Noborikawa tunnel, 42.919N / 142.116E, 23.VII–5.VIII.2007, N. Kuhara leg. (OMNH); 1♂, Hokkaidō, Sapporo City, Teine Ward, Mt. Teine-kanayama, alt. 560 m, 18.VII.2012, M. Itō leg. (OMNH); 1♀, Hokkaidō, Sapporo City, Noppo Forest Park, alt. 80 m, 9.VII.2012, M. Itō leg. (OMNH); 1♀, Hokkaidō,

Sapporo City, Hitsujigaoka, 30.VI–7.VII.2008 (MsT.), K. Konishi leg. (OMNH); 1♀, same locality and collector, 11–18.VIII.2008 (MsT.) (OMNH); 1♀, same locality and collector, 7–14.VIII.2009 (MsT.) (OMNH); 2♀♀, same locality and collector, 4–11.VII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 18–25.VII.2011 (MsT.) (OMNH); 5♀♀, same locality and collector, 1–8.VIII.2011 (MsT.) (OMNH); 2♀♀, same locality and collector, 8–15.VIII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 15–22.VIII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 29.VIII–5.IX.2011 (MsT.) (OMNH); 2♀♀, same locality and collector, 8–15.VIII.2012 (MsT.) (OMNH); 1♀, Hokkaidō, Chitose City, Bifue, Kusabue-rindō, 17.VIII–1.IX.2012 (MsT.), N. Kuhara leg. (OMNH); 1♀, Yamagata Pref., Mamurogawa Town, 17.IX.2012 (MsT.), Y. Matsubara & K. Fukuda leg. (OMNH); 1♀1♂, Miyagi Pref., Minamisanriku Town, Tokura, 6.VIII–4.IX.2016 (MsT.), T. Suzuki leg. (OMNH); 1♂, Tōkyō Pref., Hinohara Vil., Kazuma, Mt. Mitou, 22–23.VII.2012, N. Kikuchi leg. (OMNH); 1♀, Kanagawa Pref., Yokosuka City, Miura peninsula, Mt. Fuji-yama, 17.V.2001, I. Kawashima leg. (KPMNH); 1♀, Kanagawa Pref., Miura City, Misaki-machi, Koajiro, 28.V.2004, I. Kawashima leg. (KPMNH); 1♂, Yamanashi Pref., Kōshū City, Sagashio, alt. 1180–1250 m, 4.V.2008, H. Katahira leg. (OMNH); 2♀♀, Yamanashi Pref., Nirasaki City, Marunomachi, 8–17.VII.2005 (MsT.), K. Hosoda leg. (OMNH); 3♀♀, same locality and collector, 20.VII–1.VIII.2007 (MsT.) (OMNH); 1♀, same locality and collector, 21–28.VIII.2008 (MsT.) (OMNH); 1♀, Yamanashi Pref., Nirasaki City, Gozaishi Spa, 8–17.VII.2005 (MsT.), K. Hosoda leg. (OMNH); 1♀, same locality and collector, 15.IV–10.V.2008 (MsT.) (OMNH); 1♂, Nagano Pref., Ueda City, Sugadaira-kōgen, Tsukuba Univ., alt. 1,250–1,340 m, 1.VIII.2012, S. Fujie leg. (OMNH); 1♀, Nagano Pref., Ueda City, Sugadaira-kōgen, Tsukuba Univ., alt. 1,320 m, 8.VIII–3.IX.2014 (MsT.), S. Shimizu leg. (OMNH); 1♀, Toyama Pref., Nanto City, Toga Vil., Kamimomose, alt. 664 m, 21–28.VII.2009 (MsT.) M. Watanabe leg. (KPMNH); 1♀, same locality and collector, 18–25.VIII.2011 (MsT.) (KPMNH); 1♀, same locality and collector, 25.VIII–1.IX.2011 (MsT.) (KPMNH); 1♀, Toyama Pref., Toyama City, Arimine, Oritate, 6.VII.2014, R. Matsumoto leg. (OMNH); 1♀, Ishikawa Pref., Kaga City, Mt. Kariyasu-yama, 28.VI–18.VII.2002 (MsT.), K. Esaki leg. (OMNH); 2♀♀, same locality and collector, 31.VII–30.VIII.2002 (MsT.) (OMNH); 1♀, same locality and collector, 31.VII–31.VIII.2002 (MsT.) (OMNH); 1♂, Fukui Pref., Ikeda Town, Mt. Heko-san, 20.IX.1981, H. Kurokawa leg. (OMNH); 2♀♀, Fukui Pref., Ikeda Town, Mizuumi, Mt. Heko-san, alt. 1,400–1,460 m, 10.VI.2016, S. Shimizu leg. (OMNH); 1♀, Fukui Pref., Tsuruga City, marsh of Nakaikemi, 17.VI–10.VII.2016 (MsT.), A. Noishiki leg. (OMNH); 1♀, Shiga Pref., Takashima City, Makino Town, Makino-kōgen, 19.VII.2014, S. Fujie leg. (OMNH); 1♀, Mie Pref., Suzuka City, Okubocho, Okunotani, 15.VIII.2010 (LT.), Y. Shinogi leg. (OMNH); 1♀, Kyōto Pref., Miyadu City, Kamiseya, Seya-kōgen, 18.VII.2015, S. Fujie leg. (OMNH); 1♀, Nara Pref., Gose City, Mt. Kongō-san, 24.V.2018, S. Fujie leg. (OMNH); 1♂, Wakayama Pref., Katsuragi Town, Mt. Mikuniyama, S-slope, 34°21'31"N / 135°29'06"E, 31.V.2004, R.

Matsumoto leg. (OMNH); 1♀, Ōsaka Pref., Chihayaakasaka Vil., Mt. Kongō-san, alt. 1,056 m, 7–15.VII.2012 (MsT.), S. Fujie leg. (OMNH); 1♀, Hyōgo Pref., Inagawa Town, Sugio, 4.VI.2016, S. Fujie leg. (OMNH); 2♀♀, Hyōgo Pref., Kami Town, Ojira Ward, Niiya, alt. 710 m, 14.VII–23.VIII.2013 (MsT.), S. Fujie & M. Itō leg. (OMNH); 1♀, Ehime Pref., Saijō City, Mt. Ibuki-yama, 14.VI.2002, R. Matsumoto leg. (OMNH); 1♀, Kōchi Pref., Umaji Vil., 1. IX. 2010 (MsT.), Y. Matsubara & K. Fukuda leg. (KPMNH).

Meteorus curvus Maeto

Meteorus curvus Maeto, 1988. Type. ♀, from Japan in ELKU.

Distribution. Japan.

Distribution within Japan. Hokkaidō, Honshū: Toyama Pref. (Maeto, 1988b).

Meteorus endoclytae Maeto

Meteorus endoclytae Maeto, 1990. Type. ♀, from Japan in ELKU.

Distribution. Japan.

Distribution within Japan. Honshū: Aomori Pref., *Iwate Pref., Tochigi Pref., Niigata Pref., Nagano Pref., *Toyama Pref., *Fukui Pref., Kyōto Pref., *Hyōgo Pref.; Shikoku: Ehime Pref.; Kyūshū: Fukuoka Pref., Kumamoto Pref., Kagoshima Pref. (Maeto, 1990; Kudo *et al.*, 1999; Fujie & Shimizu, 2015; Katayama & Fujie, 2017; present study).

Hosts. *Phassus excrescens* (Hepialidae) in Japan (Maeto, 1990).

Examined material. 1♂, Iwate Pref., Nishiwaga Town, Mt. Mahiru-dake, 12.VIII.2015, S. Fujie leg. (OMNH); 1♂, Niigata Pref., Myōkō City, Suginosawa, Mt. Sasagamine, alt. 1,230–1,300 m, 24.VIII.2014, S. Shimizu leg. (OMNH); 3♀♀, Toyama Pref., Toyama City, Arimine, Jūrōdani, alt. 1,120 m, 8–15.IX.2009 (MsT.), M. Watanabe leg. (KPMNH); 1♂, same locality and collector, 4–11.VIII.2009 (MsT.) (KPMNH); 1♀, Fukui Pref., Ikeda Town, Mizuumi, Mt. Heko-san, alt. ca. 1,400 m, 19–27.VI.2016 (MsT.), S. Shimizu leg. (OMNH); 2♀♀, Kyōto Pref., Miyadu City, Kamiseya, Seya-kōgen, 18–19.VII.2015 (LT.), S. Fujie leg. (OMNH); 2♀♀1♂, same locality and collector, 18. VII.2015 (OMNH); 1♀, same locality, 18.VII–1.VIII.2015 (MsT.), T. Hirooka & S. Fujie leg. (OMNH); 1♀, Hyōgo Pref., Kami Town, Ojira Ward, Niiya, alt. 710 m, 15.VI–14.VII.2013 (MsT.), S. Fujie & M. Itō leg. (OMNH); 1♂, same locality, 20.VI.2015, S. Fujie leg. (OMNH); 1♀, Hyōgo Pref., Kami Town, Hachikita-kōgen, 29.VII.2013, T. Oshio leg. (OMNH); 1♀, Hyōgo Pref., Yabu City, Mt. Hyōnoson, Oodanganaru, alt. 880–1,280 m, 6.VIII.2011, K. Watanabe leg. (OMNH).

Meteorus flavicoxa Maeto

Meteorus flavicoxa Maeto, 1986. Type. ♀, from Japan in ELKU.

Distribution. Japan, Korea, Russian Far East.

Distribution within Japan. Hokkaidō; Honshū: Yamagata Pref., *Yamanashi Pref., Niigata Pref., Ishikawa Pref. (Maeto, 1986b; Togashi, 2002; Fujie & Shimizu, 2015; present study).

Examined material. 1♀, Yamanashi Pref., Daibosatsutōge, alt. 1,400 m, 2.VIII.2010, M. Maeda leg. (OMNH).

Meteorus gotoi Maeto

Meteorus gotoi Maeto, 1988. Type. ♀, from Japan in ELKU.

Distribution. Japan.

Distribution within Japan. Kyūshū: Ōita Pref. (Maeto, 1988a).

Meteorus graciliventris Muesebeck

Meteorus graciliventris Muesebeck, 1954. Type. ♀, from Japan in USNM.

Distribution. China, Japan, Korea, Russian Far East; Western Palaearctic region.

Distribution within Japan. Hokkaidō; Honshū: Tochigi Pref., Saitama Pref., Kanagawa Pref., *Yamanashi Pref., *Niigata Pref., *Nagano Pref., *Ishikawa Pref., Fukui Pref., *Mie Pref., Kyōto Pref., Ōsaka Pref., Hyōgo Pref., Tottori Pref., Hiroshima Pref.; Hachijōjima Is.; Shikoku: *Tokushima Pref., Ehime Pref.; Kyūshū: Fukuoka Pref.; Tsushima Is.; Yaku-shima Is.; Okinawa-hontō Is (Huddleston, 1980; Maeto, 1990; Maeto & Nakamura, 1995; Nambu, 1999; 2000; Kubo, 2000; Nagase, 2004; Watanabe *et al.*, 2012; Katayama & Fujie, 2017; Nagase & Watanabe, 2018; present study).

Hosts. No host records are available in Japan, while *Pectinophora gossypiella* (Gelechiidae) is known as its host (Yu *et al.*, 2016).

Examined material. 2♀♀, Hokkaidō, Sapporo City, Hitsujigaoka, 14–21.VII.2008 (MsT.), K. Konishi leg. (OMNH); 1♀, same locality and collector, 27.VI–4.VII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 25.VII–1.VIII.2011 (MsT.) (OMNH); 1♀, Yamanashi Pref., Nirasaki City, Marunomachi, 15–25.V.2007 (MsT.), K. Hosoda leg. (OMNH); 1♀, Niigata Pref., Nagaoka City, Suyoshi, Mt. Nokogiri-yama, 37°23'N 138°55' E, alt. 690 m, 21.VII–21.VIII.2014 (MsT.), S. Shimizu & R. Shimizu leg. (OMNH); 1♀, Nagano Pref. Sugadaira, 7.VII.1980, K. Yasuda leg. (OMNH); 1♀, Ishikawa Pref., Kaga City, Mt. Kariyasuyama, 28.VI–19.VII.2002 (MsT.), K. Esaki leg. (OMNH); 1♀, Mie Pref., Tsu City, Kawagechō, Nakabeppo, 9.V.2009 (LT.), Y. Shinogi leg. (OMNH); 1♀, Ōsaka Pref., Takatsuki City, Nariai, 6.VI.2017, F. Fujita leg. (OMNH); 1♀, Hyōgo Pref., Kōbe City, Nada Ward, Rokkōdai-chō, Campus of Kōbe University, 28–29.IV.2015, K. Takasuka leg. (OMNH); 2♀♀, Tottori Pref., Tottori City, 28.V.1970, H. Aoki leg. (OMNH); 1♀, same locality and collector, 29.V.1970 (OMNH); 1♀, same locality and collector, 10.XI.1971 (OMNH); 3♀♀, Tokushima Pref., Miyoshi City, Higashiyasugeoi, Mt. Tsurugi-san, alt. 1440 m, 33.870163N / 134.080078E, 2–3.VIII.2019 (LT.), S. Shimizu & J. Okayasu leg. (OMNH).

***Meteorus heliophilus* Fischer**

Meteorus heliophilus Fischer, 1970. Type. ♀, from Austria in NM.

Distribution. China, Japan; Western Palaearctic region.

Distribution within Japan. Hokkaidō; Honshū: *Niigata Pref., Tochigi Pref. (Maeto, 1990; Katayama & Fujie, 2017; present study).

Hosts. No host records are available in Japan, while Noctuidae (*Lithophane*, *Noctua*, *Orthosia*, *Polia*, *Xestia*) are known as its hosts (Yu *et al.*, 2016).

Examined material. 2♀♀, Hokkaidō, Kamishihoro Town, Mitsumata, 2.VIII.2013, R. Matsumoto leg. (OMNH); 2♀♀1♂, Niigata Pref., Itoigawa City, Renge Spa, 20.VIII.2016 (LT.), M. Itō leg. (OMNH).

***Meteorus hirsutipes* Huddleston**

Meteorus hirsutipes Huddleston, 1980. Type. ♀, from Finland in NHM.

Distribution. China, Japan, Russian Far East; Western Palaearctic region.

Distribution within Japan. Hokkaidō; Honshū: *Niigata Pref., Nagano Pref., Hyōgo Pref.; Shikoku: Tokushima Pref.; Kyūshū: Fukuoka Pref., Ōita Pref. (Maeto, 1988a; present study).

Hosts. Unknown. Stigenberg & Hansen (2013) reported that this species was emerged from the fruit body of *Inonotus obliquus* (Hymenochaetaceae).

Examined material. 1♀, Niigata Pref., Myōkō City, Suginosawa, Mt. Sasagamine, 36°51–52'N / 138°3–6'E, alt. 1,230–1,370 m, 24.VIII.2014, S. Shimizu leg. (OMNH).

***Meteorus ictericus* (Nees)**

Bracon ictericus Nees von Esenbeck, 1811. Syntypes ♀, from Germany, lost.

Meteorus adoxophyesi Minamikawa, 1954. Syn. by Huddleston (1980).

Meteorus makinoharanus Minamikawa, 1954. Syn. by Belokobylskij *et al.* (2003).

Perilitus rubriceps Ratzeburg, 1844. Syn. by Ku *et al.* (2001).

Distribution. China, Japan, Korea, Russian Far East; Australasian, Nearctic, and Palaearctic regions.

Distribution within Japan. Hokkaidō; Honshū: Aomori Pref., Iwate Pref., Niigata Pref., Ibaraki Pref., Saitama Pref., Kanagawa Pref., Shizuoka Pref., Ishikawa Pref., Gifu Pref., Mie Pref., Kyōto Pref., *Nara Pref., *Ōsaka Pref., Hyōgo Pref., Tottori Pref., *Hiroshima Pref., Yamaguchi Pref.; *Awaji-shima Is.; Hachijojima Is.; Shikoku: Tokushima Pref.; Kyūshū: Kumamoto Pref. Ōita Pref.; Yaku-shima Is.; Okinawa-hontō Is. (Huddleston, 1980; Yukinari, 1984; Maeto, 1990; Nakai *et al.*, 1997; Nagase, 2004; Fujie & Shimizu, 2015; Nagase & Watanabe, 2018; present study).

Hosts. *Adoxophyes* sp., *Archips abiephaga*, *Archips breviplicanus*, *Archips issikii*, *Archips oporana*, *Choristoneura*

jezoensis, *Grapholita molesta*, and *Ptycholomoides aeriferana* (Tortricidae) in Japan (Maeto, 1990). Blastodacnidae, Choreutidae, Diprionidae, Gelechiidae, Geometridae, Lasiocampidae, Lycaenidae, Lymantriidae, Momphidae, Noctuidae, Nymphalidae, Pyralidae, Simaethidae, Thaumetopoeidae, Tortricidae, Yponomeutidae, and Zygaenidae are also known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Hokkaidō, Nakashibetsu Town, Narabigaoka, 8–31.VIII.2018 (MsT.), C. Nakata & M. Takada leg. (OMNH); 1♀, Shizuoka Pref., Fukuroi City, Yamada, 3.VI.2018, S. Fujie leg. (OMNH); 2♀♀, Nara Pref., Tenkawa Vil., Kitozumi, 34.19N / 135.93E, 16.VII.2016, S. Fujie leg. (OMNH); 2♂♂, Nara Pref., Totsukawa Vil., Mt. Shakagatake, 31.V.2014, S. Fujie leg. (OMNH); 1♀, Ōsaka Pref., Kawachinagano City, Oyamadachō, 25.VII.2018, S. Fujie leg. (OMNH); 1♀, Ōsaka Pref., Kaizuka City, Mt. Izumi-katsuragisan, 1.X.1999, R. Matsumoto leg. (OMNH); 1♀6♂♂, Awajishima Is., Hyōgo Pref., Sumoto City, Chikusa, 2.VI.2019 (LT.), S. Shimizu leg. (OMNH); 9♂♂, same locality and collector, 3.VI.2019 (LT.) (OMNH); 4♀♀, Awaji-shima Is., Hyōgo Pref., Minamiawaji City, Kakinokidani-ike, 3.VI.2019, S. Shimizu leg. (OMNH); 1♀, Tottori Pref., Aoya Town, 8.VI.1969, H. Aoki leg. (OMNH); 1♀, Hiroshima Pref., Shōbara City, Saijō Town, Tachiboshi Parking Lot, Mts. Hiba, alt. 1180 m, 22–23.VII.2019 (LT.), S. Shimizu leg. (OMNH); 2♀♀, Tokushima Pref., Miyoshi City, Higashiyasugeoi, Mt. Tsurugi-san, alt. 1440 m, 33.870163N / 134.080078E, 2–3.VIII.2019 (LT.), S. Shimizu & J. Okayasu leg. (OMNH).

***Meteorus insulicola* Maeto**

Meteorus insulicola Maeto, 1989. Type. ♀, from Japan in ELKU.

Distribution. Japan, Korea, Russian Far East.

Distribution within Japan. Hokkaidō; Honshū: Iwate Pref., *Miyagi Pref., Tochigi Pref., Tōkyō Pref., *Yamanashi Pref., Shizuoka Pref., *Ishikawa Pref., Gifu Pref., *Shiga Pref., Mie Pref., Wakayama Pref., Hyōgo Pref., Tottori Pref., *Hiroshima Pref.; Kyūshū: Fukuoka Pref., Ōita Pref., Kumamoto Pref., Miyazaki Pref.; Tsushima Is. (Maeto, 1989b, Konishi & Maeto, 2000, Fujie & Maeto, 2014, Katayama & Fujie, 2017; present study).

Examined material. 8♀♀, Hokkaidō, Niikappu Town, Hankandate, 8.VIII.2012, S. Fujie leg. (OMNH); 2♀♀, Hokkaidō, Tomakomai City, Uenae, 9.VIII.2012, S. Fujie leg. (OMNH); 3♀♀, same locality and collector, 8–14.VIII.2012 (MsT.) (OMNH); 1♀, Hokkaidō, Sapporo City, Minami Ward, Toyama, alt. 200–220 m, 11.VIII.2012, S. Fujie leg. (OMNH); 2♀♀, Miyagi Pref., Minamisanriku Town, Mt Tatsuganesan, 5.VIII.2016, S. Fujie leg. (OMNH); 1♀, Yamanashi Pref., Nirasaki City, Marunomachi, 8–17.VII.2005 (MsT.), K. Hosoda leg. (OMNH); 1♀, Yamanashi Pref., Nirasaki City, Gozaishi Spa, 8–17.VII.2005 (MsT.), K. Hosoda leg. (OMNH); 2♀♀, Ishikawa Pref., Kaga City, Mt. Kariyasu-yama, 31.V–19.VI.2002 (MsT.), K. Esaki leg. (OMNH); 1♀, Gifu Pref., Takayama City, Migimata-rindō to Takidani, 3.VIII.2013, S. Fujie leg. (OMNH); 2♀♀, Shiga Pref., Nagahama City, Nishiazachō, Sugaura, 29.VII.2017 (LT.), S. Fujie leg.

(OMNH); 1♀, Shiga Pref., Shinasahi Town, Shinasahihama-
enchi, alt. 87 m, 8.VI.1994 (LT.), Y. Miyatake leg. (OMNH);
2♀♀, Mie Pref., Ueno City, Ôsawaïke, 24.VIII.1998, A.
Kawazoe leg. (OMNH); 1♀, Hyôgo Pref., Kami Town,
Niiya, Mikata-kôgen, alt. 700–1000 m, 17.VII.2011, S. Fujie
leg. (OMNH); 1♀, Tottori Pref., Aoya Town, Tsuyutani,
19.VII.1974, H. Aoki leg. (OMNH); 1♀, Hiroshima Pref.,
Shôbara City, Saijô Town, Tachieboshi Parking Lot, Mts. Hiba,
alt. 1,180 m, 22–23.VII.2019 (LT.), S. Shimizu leg. (OMNH).

Remarks. The specimens examined agree well with the
original description but differ in having the frons rarely with
two weak carinae.

Meteorus jezoensis Maeto

Meteorus jezoensis Maeto, 1988. Type. ♀, from Japan in
ELKU.

Distribution. China, Japan, Russian Far East.

Distribution within Japan. Hokkaidô; Honshû: *Saitama
Pref., *Fukui Pref., *Nara Pref., *Ôsaka Pref. (Maeto, 1988a;
present study).

Examined material. 1♀, Hokkaidô, Nakashibetsu Town,
Narabigaoka, 31.VIII–4.X.2019 (MsT.), C. Nakata & M. Takada
leg. (OMNH); 1♀, Hokkaidô, Sapporo City, Hitsujigaoka, 8–15.
VIII.2011 (MsT.), K. Konishi leg. (OMNH); 1♀, Saitama Pref.,
Chichibu City, Kawamata, 28–30.VIII.2012, N. Kikuchi leg.
(OMNH); 1♀, Fukui Pref., Obama City, Onyû Pass, 9.VIII.2019
(LT.), M. Itô leg. (OMNH); 1♀, Nara Pref., Totsukawa Vil., Mt.
Shakaga-take, 26.VII–24.VIII.2014 (MsT.), T. Hirooka & S.
Fujie leg. (OMNH); 1♀, Ôsaka Pref., Takatsuki City, Niryou,
26.V–13.V.2013 (MsT.), S. Fujie leg. (OMNH).

Meteorus kotanii Maeto

Meteorus kotanii Maeto, 1986. Type. ♀, from Japan in ELKU.

Distribution. Japan.

Distribution within Japan. Hokkaidô (Maeto, 1986b).

Meteorus kotenkoi Belokobylskij

Meteorus kotenkoi Belokobylskij, 1987. Type. ♀, from Russia
in ZISP.

Meteorus albifasciatus Maeto, 1989. Syn. by Belokobylskij
(2000g).

Distribution. China, Japan, Russian Far East.

Distribution within Japan. Hokkaidô; Honshû: Kanagawa
Pref., *Gifu Pref., *Shiga Pref., *Nara Pref., *Ôsaka Pref.,
*Hyôgo Pref., *Tottori Pref.; Shikoku: *Kagawa Pref. (Maeto,
1989b; Kubo, 2000; Nagase, 2004; Nagase & Watanabe,
2018; present study).

Examined material. 1♀, Hokkaidô, Nakashibetsu Town,
Narabigaoka, 31.VIII–4.X.2018 (MsT.), C. Nakata & M. Takada
leg. (OMNH); 1♀, Hokkaidô, Kuriyama Town, Takinoshita,
16.VII–5.VIII.2009 (MsT.), A. Ueda leg. (OMNH); 1♀,
Hokkaidô, Sapporo City, Hitsujigaoka, 29.VIII–5.IX.2011

(MsT.), K. Konishi leg. (OMNH); 1♀, same locality and
collector, 22–29.VIII.2012 (MsT.) (OMNH); 1♀, Gifu Pref.,
Motosu City, Nukumi Pass, 13.VII–6.IX.2014 (MsT.), S.
Fujie leg. (OMNH); 1♂, Shiga Pref., Shiga Town, Mt. Hira-
san, Yakumogahara, 16.VI.1999, R. Matsumoto leg. (OMNH);
1♀, Nara Pref., Nara City, Nakamachi, Kinki University,
14–21.X.2011 (MsT.), M. Itô leg. (OMNH); 1♀, Ôsaka Pref.,
Kawachinagano City, Kawadera, alt.150–200 m, 31.VIII.2014,
S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Takarazuka City,
Kizukinomori, alt. 100 m, 22.VI.2015, M. Ito leg. (OMNH);
1♀, Tottori Pref., Tottori City, 26.V.1974, H. Aoki leg. (OMNH);
1♀, Kagawa Pref., Takamatsu City, Enza-chô, 12.X.2011, K.
Watanabe leg. (OMNH).

Meteorus kunashiricus Belokobylskij

(Fig.15A–F)

Meteorus kunashiricus Belokobylskij, 1995. Type. ♀, from
Russia in IZANU.

Meteorus micropterus: Maeto (1988) (misidentified).

Distribution. Japan, Russian Far East. This species is new
to Japan.

Distribution within Japan. Hokkaidô; Honshû: *Nagano
Pref., *Ishikawa Pref., *Kyôto Pref., *Nara Pref., *Wakayama
Pref., *Hyôgo Pref.; Shikoku: Ehime Pref.; Kyûshû: Fukuoka
Pref., Ôita Pref., Kumamoto Pref., Miyazaki Pref.; Yaku-
shima Is. (Maeto, 1988b; present study).

Examined material. 2♀♀, Hokkaidô, Sapporo City,
Hitsujigaoka, 7–14.VII.2008 (MsT.), K. Konishi leg. (OMNH);
1♀, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan,
alt. 1,720–1,820 m, 7.VIII.2010, K. Watanabe leg. (OMNH);
1♀, Ishikawa Pref., Kaga City, Mt. Kariyasu-yama, 31.V–19.
VI.2002 (MsT.), K. Esaki leg. (OMNH); 1♀, Kyôto Pref.,
Kyotango City, Mt. Ichigao-san, 22.V.2016, S. Fujie leg.
(OMNH); 1♀, Nara Pref., Totsukawa Vil., Mt. Shakaga-
take, 10–11.VIII.2013 (LT.), S. Fujie leg. (OMNH); 1♀, same
locality, 26.VII–24.VIII.2013 (MsT.) T. Hirooka & S. Fujie leg.
(OMNH); 1♀, Wakayama Pref., Mt. Ôtô-san, 3.VII.1980, E.
Nishida leg. (OMNH); 2♀♀, Hyôgo Pref. Kami Town, Muraoka
Ward, Fukuoka, 35.4113N / 134.5998E, 15.VI.2013 (LT.), S.
Fujie leg. (OMNH).

Remarks. The Japanese specimens agree with the original
description (Belokobylskij, 1995), but differ in having antenna
26–28 segmented. Maeto (1988b) recorded *M. micropterus*
(Haliday) from Japan and noted that the Japanese specimens
differed from an authentic European specimen and the
redescriptions by Huddleston (1980) in some character-states.
These differences are largely consistent with the differences
between *M. micropterus* and *M. kunashiricus* pointed out by
Belokobylskij (1995). Hence, the specimens of *M. micropterus*
sensu Maeto (1988b) should be assigned to *M. kunashiricus*.

Meteorus kurokoi Maeto

Meteorus kurokoi Maeto, 1989. Type. ♀, from Japan in
ELKU.

Distribution. China, Japan, Russian Far East.

Distribution within Japan. Honshû: *Aichi Pref.; Kyûshû: Fukuoka Pref. (Maeto, 1989b; present study).

Examined material. 1♀, Aichi Pref., Toyota City, Hiomochicho, Mt. Kodama-yama, 22.VII.2012, T. Mano leg. (OMNH).

Meteorus kyushuensis Maeto

Meteorus kyushuensis Maeto, 1988. Type. ♀, from Japan in ELKU.

Meteorus obfuscatus: Watanabe (1944) (misidentified).

Distribution. Japan, Russian Far East; Sweden.

Distribution within Japan. Honshû: *Wakayama Pref.; Shikoku: *Tokushima Pref.; Kyûshû: Fukuoka Pref., Saga Pref., Kumamoto Pref. (Maeto, 1988a; present study).

Hosts. *Neotriplax lewisi* (Erotylidae) in Japan (Maeto, 1988a).

Examined material. 1♀, Wakayama Pref., Katsuragi Town, Mt. Mikuni-yama, S-slope, 34°21'31"N / 135°29'06"E, 31.V.2004, R. Matsumoto leg. (OMNH); 1♀, Tokushima Pref., Miyoshi City, Higashiyasugeoi, Mt. Tsurugi-san, alt. 1,440 m, 33.870163N / 134.080078E, 2–3.VIII.2019 (LT.), S. Shimizu & J. Okayasu leg. (OMNH).

Meteorus limbatus Maeto

Meteorus limbatus Maeto, 1989. Type. ♀, from Japan in ELKU.

Distribution. China, Japan, Korea, Russian Far East; Western Palaearctic region.

Distribution within Japan. Hokkaidô; Honshû: Akita Pref., *Ibaraki Pref., Niigata Pref., Nagano Pref., *Nara Pref., *Hyôgo Pref., *Tottori Pref.; Shikoku: Ehime Pref.; Kyûshû: Kumamoto Pref., Kagoshima Pref.; Tsushima Is.; Yaku-shima Is. (Maeto, 1989a; Fujie & Shimizu, 2015; present study).

Hosts. No host records are available in Japan, while Noctuidae (*Hypena*) are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Ibaraki Pref., Tsukuba City, Tennoudai, Tsukuba Univ., alt. 25 m, 8.VI.2013, S. Shimizu leg. (OMNH); 1♀, Niigata Pref., Nagaoka City, Urase-machi, alt. ca. 35 m, 14–26.V.2015 (MsT.), R., Y. & S. Shimizu leg. (OMNH); 1♀, same locality and collector, 6–25.VII.2015 (MsT.) (OMNH); 1♀, Nara Pref., Nara City, Nakamachi, Kinki University, 14–21.VII.2011 (MsT.), M. Itô leg. (OMNH); 1♀, Hyôgo Pref., Kami Town, Muraoka Ward, Fukuoka, 35.4113N / 134.5998E, 15.VI.2013 (LT.), S. Fujie leg. (OMNH); 1♀, Tottori Pref., Aoya Town, Tsuyutani, alt. 20 m, 11.VII.1971, H. Aoki leg. (OMNH).

Meteorus melanostictus Capron & Marshall

Meteorus melanostictus Capron in Marshall 1887. Type. ♀, from Great Britain, lost.

Distribution. Belarus, Bulgaria, Germany, Hungary, Ireland, Japan, Korea, Russia, Switzerland, United Kingdom.

Distribution within Japan. Honshû: Nagano Pref. (Maeto, 1989a).

Hosts. No host records are available in Japan, while Geometridae (*Apeira*, *Ennomos*, *Thera*), Lymantridae (*Lymantria*), and Tortricidae (*Dichelia*) are known as its hosts.

Meteorus narangae Sonan

Meteorus narangae Sonan, 1943. Type. ♀, from Taiwan in TARI.

Distribution. China, Japan, Korea, Russian Far East, Taiwan; Oriental region.

Distribution within Japan. Hokkaidô; Honshû: Aomori Pref., Akita Pref., Miyagi Pref.; Kyûshû: Fukuoka Pref., Miyazaki Pref., Kagoshima Pref.; Amami-ôshima Is.; Ishigakijima Is.; Iriomote-jima Is. (Yasumatsu & Fukushima, 1954; Watanabe, 1966; 1967; Maeto, 1989a; present study).

Hosts. *Naranga aenescens* and *Pseudaletia separata* (Noctuidae) in Japan (Yasumatsu & Fukushima, 1954; Watanabe, 1966; Maeto, 1989a).

Examined material. 5♂♂, Iriomote-jima Is., Taketomi Town, emerged from *Mythimna separata* in 2012, collector unknown (OMNH); 2♀♀, Iriomote-jima Is., Taketomi Town, Haeminaka, 24°17'33"N / 123°52'16"E, 7.IV.2014, K. Sakagami leg. (OMNH).

Meteorus nixonii Huddleston

Meteorus nixonii Huddleston, 1980. Type. ♀, from Austria in NHM.

Distribution. Japan, Korea, Russian Far East; Western Palaearctic region.

Distribution within Japan. Hokkaidô; Honshû: Aomori Pref., Iwate Pref., Tochigi Pref., *Niigata Pref., Ishikawa Pref., Nagano Pref., *Kyoto Pref., *Hyôgo Pref., Tottori Pref., Hiroshima Pref.; Shikoku: Ehime Pref.; Kyûshû: Fukuoka Pref., Ôita Pref., Kumamoto Pref., Miyazaki Pref. (Maeto, 1986b; Maeto & Nakamura, 1995; Katayama & Fujie, 2017; present study).

Examined material. 2♀♀, Hokkaidô, Sapporo City, Teine Ward, Mt. Teine-kanayama, alt. 560 m, 18.VII.2012, M. Itô leg. (OMNH); 1♀, Hokkaidô, Sapporo City, Hitsujigaoka, 28.VII–4.VIII.2008 (MsT.), K. Konishi leg. (OMNH); 1♀, same locality and collector, 11–18.VIII.2002 (MsT.) (OMNH); 1♀, Aomori Pref., Mutsu City, Ôhata-machi, 5.VIII.2012, (LT.), S. Fujie leg. (OMNH); 1♀, Niigata Pref., Myôkô City, Suginosawa, Mt. Sasagamine, alt. ca. 1,300 m, 16.VII.2013, S. Shimizu leg. (OMNH); 1♀, Nagano Pref., Shimashimadani, 29.VII.1980, E. Nishida leg. (OMNH); 2♀♀, Ishikawa Pref., Kaga City, Mt. Kariyasu-yama, 31.V–19.VI.2002 (MsT.), K. Esaki leg. (OMNH); 1♀, same locality and collector, 28.VI–19.VII.2002 (MsT.) (OMNH); 1♀, same locality and collector, 18–30.VII.2002 (MsT.) (OMNH); 1♀, same locality and collector, 31.VII–30.VIII.2002 (MsT.) (OMNH); 1♀, Kyôto Pref., Kyôtango City, Komakura Pass, alt. 450–560 m, 22.V.2016, S. Fujie leg. (OMNH); 1♀, Kyôto Pref., Miyadu City, Kamiseya,



Fig. 15. *Meteorus kunashiricus* Belokobylskij, female, from Hyôgo Prefecture. — A, Habitus, lateral view; B, antenna; C, head, frontal view; D, head and mesosoma, lateral view; E, wings, F, head and mesonotum, dorsal view.

Seya-kôgen, 10.X.2015, S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Kami Town, Ojira Ward, Niiya, 20.VI–11.VII.2015 (MsT.), S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Yabu City, Mt. Hyônosen, Oodanganaru, alt. 880–1,280 m, 6.VIII.2011, K. Watanabe leg. (OMNH); 2♀♀, same locality, 14–15.VII.2013

(LT.), S. Fujie leg. (OMNH); 1♀, Hiroshima Pref., Shôbara City, Saijô Town, Tachieboshi Parking Lot, Mts. Hiba, 30–31.VII.2019 (LT.), S. Shimizu leg. (OMNH); 5♀♀8♂♂, same locality and collector, 22–23.VII.2019 (LT.) (OMNH).

***Meteorus nodai* Maeto**

Meteorus nodai Maeto, 1989. Type. ♀, from Japan in ELKU.

Distribution. China, Japan, Korea, Russian Far East.

Distribution within Japan. Kyūshū: Fukuoka Pref., Kumamoto Pref. (Maeto, 1989a).

***Meteorus obsoletus* (Wesmael)**

Meteorus obsoletus (Wesmael, 1835) Type. ♀, from Belgium in IRSNB.

Meteorus viridanae Johansson, 1964.

Distribution. Japan, Korea, Russian Far East; Palearctic region.

Distribution within Japan. Hokkaidō; Honshū: *Iwate Pref., *Ishikawa Pref., Fukui Pref., Gifu Pref., Hyōgo Pref., *Tottori Pref., *Hiroshima Pref.; Shikoku: Kagawa Pref.; Kyūshū: Fukuoka Pref., Kumamoto Pref. (Maeto, 1989b; Watanabe *et al.*, 2012; present study).

Hosts. *Choristoneura jezoensis*, *Lobesia* sp., and *Zeiraphera rufimitrana* (Tortricidae) in Japan (Maeto, 1989b). Noctuidae, Tephritidae, and other Tortricidae were also recorded as hosts (Yu *et al.*, 2016), but the parasitism on Tephritidae should be verified.

Examined material. 1♀, Hokkaidō, Sapporo City, Hitsujigaoka, 7–14.VIII.2009 (MsT.), K. Konishi leg. (OMNH); 1♀, same locality and collector, 14–21.VIII.2009 (MsT.) (OMNH); 1♀, Iwate Pref., Amiharionsen, 20.VIII.1979, Y. Nasu leg. (OMNH); 1♀, Ishikawa Pref., Kaga City, Mt. Kariyasu-yama, 28.VI–19.VII.2002 (MsT.), K. Esaki leg. (OMNH); 3♀♀, Tottori Pref., Yazu Town, Himeji, Mt. Ouginosen, 15–16.VIII.2020 (LT.), S. Fujie leg. (OMNH); 1♀, Hiroshima Pref., Shōbara City, Saijō Town, Tachieboshi Parking Lot, Mts. Hiba, alt. 1,180 m, 22–23.VII.2019 (LT.), S. Shimizu leg. (OMNH).

***Meteorus pendulus* (Müller)**

Ichneumon pendulus Müller, 1776. Type. Unknown.

Ichneumon gyrator Thunberg, 1822. Syn. by van Achterberg & Aguiar (2009).

Perilitus scutellator Nees, 1834. Syn. by Roman (1912).

Distribution. China, Japan, Korea, Russian Far East; Nearctic and Palearctic region.

Distribution within Japan. Hokkaidō; Honshū: Aomori Pref., Tochigi Pref., Niigata Pref., *Gunma Pref., Nagano Pref., Ishikawa Pref., *Fukui Pref., *Mie Pref., *Nara Pref., *Hyōgo Pref.; Kyūshū: Fukuoka Pref., Kumamoto Pref. (Goto *et al.*, 1986; Maeto, 1989a; Fujie & Shimizu, 2015; Katayama & Fujie, 2017; present study).

Hosts. *Xestia c-nigrum* (Noctuidae) in Japan (Goto *et al.*, 1986). Arctiidae, Blastodacnidae, Cecidomiidae, Curculionidae, Gelechiidae, Geometridae, Gracillariidae, Lasiocampidae, Lycaenidae, Lymantriidae, Noctuidae, Notodontidae, Pyralidae, and Tortricidae are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Hokkaidō, Nemuro City,

Bettouga, 43.2512N / 145.4559E, 13.IX.2017, R. Matsumoto leg. (OMNH); 1♀, Hokkaidō, Akkeshi Town, Sannushi, Bekanbeushi Marsh, 3.VIII.2013, R. Matsumoto leg. (OMNH); 1♀, Hokkaidō, Kamishihoro Town, Mitsumata, 2.VIII.2013, R. Matsumoto leg. (OMNH); 1♀, Hokkaidō, Sapporo City, Hitsujigaoka, 7–21.XI.2011 (MsT.), K. Konishi leg. (OMNH); 1♀, Hokkaidō, Chitose City, Bibi, VI.2015, Y. Adachi leg. (OMNH); 1♀, Hokkaidō, Tomakomai City, Uenae, 9.VIII.2012, S. Fujie leg. (OMNH); 1♀, Hokkaidō, Tomakomai City Mt. Tarumae, 9.VIII.2012, S. Fujie leg. (OMNH); 1♀, Hokkaidō, Kushiro City, Tsuruoka, 2.VII.2013, R. Matsumoto leg. (OMNH); 2♀♀, Gunma Pref., Tsumagoi Vil., Takaminekōgen, alt. ca. 1,900 m, 3.IX.2015, M. Itō leg. (OMNH); 3♀♀, Nagano Pref., Nagawa Town, Daimon, Utsukushimatsu, alt. 1,350 m, 36.135N / 138.234E, 23.VIII.2012, S. Fujie leg. (OMNH); 1♀, same locality and collector, 22.VIII.2012 (OMNH); 1♀, Nagano Pref., Ueda City, Sugadaira-kōgen, Tsukuba Univ., alt. 1,320 m, 4–25.VI.2015 (MsT.), S. Shimizu leg. (OMNH); 1♀, same locality and collector, 26.VII–1.VIII.2015 (MsT.) (OMNH); 1♀, same locality and collector, 1–23.VIII.2015 (MsT.) (OMNH); 1♀, same locality and collector, 5.IX.2013 (OMNH); 1♀, Nagano Pref., Tateshina Town, Ashida-hakkano, Mt. Tateshina, alt. 1,900 m, 26.VIII.2011, S. Fujie leg. (OMNH); 2♀♀, Nagano Pref., Outaki Vil., Mt. Ontake, Tanohara, 9.VIII.2007, K. Watanabe leg. (KPMNH); 1♀, Nagano Pref., Outaki Vil., Mt. Ontakesan, Hakkaisan, alt. 1,680–2,090 m, 35°51'N / 137°31', 9.VIII.2014, S. Shimizu leg. (OMNH); 1♀, Fukui Pref., Obama City, Onyu Pass, 9.VIII.2019 (LT.), M. Itō leg. (OMNH); 1♀, Mie Pref., Komono Town, Buhei Pass, 9.VIII.2013, A. Kawazoe leg. (ONNH); 1♀, Nara Pref., Totsukawa Vil., Mt. Shakaga-take, 26.VII–24.VIII.2014 (MsT.), T. Hirooka & S. Fujie leg. (OMNH); 1♀, Hyōgo Pref., Yabu City, Mt. Hyōnoson, Oodanganaru, 13.VII.2013, S. Fujie leg. (OMNH); 2♀♀, same locality and collector, 1.VIII.2015 (OMNH); 3♀♀, same locality and collector, 2.VIII.2015 (OMNH).

***Meteorus pulchricornis* (Wesmael)**

Perilitus pulchricornis Wesmael, 1835. Type. ♀, from Belgium in IRSNB.

Meteorus japonicus Ashmead, 1906. Syn. by Marsh (1979).

Meteorus nipponensis Viereck, 1912. Syn. by Marsh (1979).

Distribution. China, Japan, Korea, Russian Far East; Australasian, Oceanic, Oriental, and Palearctic regions.

Distribution within Japan. Hokkaidō; Honshū: *Iwate Pref., Akita Pref., Niigata Pref., Saitama Pref., Chiba Pref., Tōkyō Pref., Kanagawa Pref., Nagano Pref., Shizuoka Pref., Ishikawa Pref., Fukui Pref., Gifu Pref., Shiga Pref., Mie Pref., Kyōto Pref., Nara Pref., Ōsaka Pref., Wakayama Pref., Hyōgo Pref., Okayama Pref., Tottori Pref., Hiroshima Pref., Yamaguchi Pref.; *Izu-ōshima Is., *Nii-jima Is., *Shikinejima Is., *Kōzu-shima Is., Hachijojima Is.; Chichijima Is.; *Awaji-shima Is.; Shikoku: Tokushima Pref., Kagawa Pref., Ehime Pref., Kōchi Pref.; Kyūshū: Fukuoka Pref., Saga Pref., Ōita Pref., Kumamoto Pref., Miyazaki Pref., Kagoshima Pref.; Tsushima Is.; Yaku-shima Is.; Amami-ōshima Is.; Tokunoshima

Is.; Okinawa-hontô Is.; Ishigakijima Is.; Iriomote-jima Is.; Yonagunijima Is. (Ashmead, 1906; Watanabe, 1939; Watanabe, 1957; Huddleston, 1980; Maeto, 1989; Okada, 1989; Tanaka *et al.*, 1991; Tanaka *et al.*, 1991; Hondo, 1992; Yokoyama *et al.*, 1992; Tanaka & Kusigemati; 1993; Maeto & Nakamura, 1995; Takashino *et al.*, 1998; Minami *et al.*, 1999; Kubo, 2000; Nambu, 2000; Suzuki, 2000; Nagase, 2004; Togashi, 2004; Shirai & Maeto, 2009; Miyake, 2010; Fujie & Maeto, 2014; Nguyen *et al.*, 2015; Nagase & Watanabe, 2018; Fujie *et al.*, 2019; present study).

Hosts. *Spilosoma imparilis* (Arctiidae), *Arhopala ganesa loomisi*, *Artopoetes pryeri* (Lycaenidae), *Papilio macilentus* (Papilionidae), *Lymantria dispar* (Lymantriidae), *Arcte coerulea*, *Heliopsis maritima*, *Hipoepa fractalis*, *Orthosia carnipennis*, *Pseudaletia separata*, *Spodoptera litura* (Noctuidae) (Maeto, 1989), *Chilades pandava* (Lycaenidae) (Miyake, 2010), *Pagyda quadrilineata* (Crambidae) (Togashi, 2004), *Plutella xylostella* (Plutellidae) (Okada, 1989), *Spodoptera exigua* (Noctuidae) (Tanaka *et al.*, 1991; Yokoyama *et al.*, 1992; Tanaka & Kusigemati, 1993), in Japan. Arctiidae, Choreutidae, Crambidae, Gelechiidae, Geometridae, Hesperidae, Lasiocampidae, Lycaenidae, Lymantriidae, Lyonetiidae, Noctuidae, Nolidae, Nymphalidae, Papilionidae, Psychidae, Pterophoridae, Pyralidae, Simaethidae, Tineidae, and Tortricidae are known as its hosts (Yu *et al.*, 2016; Maeto, 2018).

Examined material. 1♂, Hokkaidô, Niikappu Town, Takae, Hankandate, 42.366N / 142.301E, 8.VIII.2012, S. Fujie leg. (OMNH); 1♀, Hokkaidô, Sapporo City, Hitsujigaoka, 21–28.VII.2008 (MsT.), K. Konishi leg. (OMNH); 1♀, Hokkaidô, Akkeshi Town, Sannushi, Bekanbeushi Marsh, 3.VIII.2013, R. Matsumoto leg. (OMNH); 1♀, Aomori Pref., Aomori City, Mt. Genpachimori, 7.VIII.2012, S. Fujie leg. (OMNH); 1♂, Iwate Pref., Amiharionsen, 20.VIII.1979, Y. Nasu leg. (OMNH); 1♀, Ibaraki Pref., Tsukuba City, Kaname, the bank of Hasunuma River, 28.IV.2013, S. Shimizu leg. (OMNH); 1♀, Chiba Pref., Chikura Town, Kawato, 20.V.1991, K. Aoki leg. (KPMNH); 1♀, Kanagawa Pref., Atsugi City, Funako, 6.V–7.VI.2016 (MsT.), Y. Katô & S. Koizumi leg. (KPMNH); 1♀, Kanagawa Pref., Yokosuka City, Nobi, 27.IV.2001, I. Kawashima leg. (KPMNH); 1♀, Kanagawa Pref., Yokosuka City, Tsukui to Mt. Fuji-yama, 26.V.2004, I. Kawashima leg. (KPMNH); 1♀, Kanagawa Pref., Yokosuka City, Take, Mishima Shrine, 9.V.2001, I. Kawashima leg. (KPMNH); 1♀, Kanagawa Pref., Hadano City, Mt. Koubou-yama, 13.X.2008, M. Gunji leg. (OMNH); 2♀♀, Kanagawa Pref., Ôiso Town, Koma, Mt. Koma-yama, 35.19N / 139.19 E, alt. 20–155 m, 16.IV.2016, K. Watanabe leg. (KPMNH); 2♀♀, Kanagawa Pref., Hiratsuka City, Tsuchiya, Kanagawa Univ., 35.20N / 139.15 E, alt. ca. 80 m, 23.VII.2017, K. Watanabe leg. (KPMNH); 1♀1♂, Toyama Pref., Toyama City, Arimine, Oritate, 36.4771N / 137.4719E, 6.VII.2014, R. Matsumoto leg. (OMNH); 1♀, Ishikawa Pref., Kaga City, Mt. Kariyasu-yama, 31.V–19.VI.2002 (MsT.), K. Esaki leg. (OMNH); 1♀, same locality and collector, 28.VI–19.VII.2002 (MsT.) (OMNH); 1♀, same locality and collector, 18–30.VII.2002 (MsT.) (OMNH); 1♀, same locality and collector, 31.VII–30.VIII.2002 (MsT.) (OMNH); 1♀, Fukui Pref., Oono City, Suhara, alt. 500 m, 13.VII–7.IX. 2014 (MsT.), S. Fujie leg. (OMNH); 1♀, Fukui Pref., Tsuruga City,

marsh of Nakaikemi, 16.IV.2016, S. Fujie leg. (OMNH); 1♀, same locality, 14–30.VIII.2016 (MsT.), A. Noishiki leg. (OMNH); 1♀, same locality and collector, 2016 (MsT.) (OMNH); 1♀, Fukui Pref., Ooi Town, Natashô-notaoui, 17.VII.2021, S. Fujie leg. (OMNH); 1♂, Gifu Pref., Hikagedaira, 10.VI.1980, E. Nishida leg. (OMNH); 1♀, Gifu Pref., Gifu City, Nagara, Mt. Dodogamine, 11.X.2004, M. Tanaka leg. (OMNH); 1♂, same locality and collector, 17.VII.2004 (OMNH); 1♀, Shiga Pref., Nagahama City, Nishiazaichô, Sugaura, 29.VII.2017 (LT.), S. Fujie leg. (OMNH); 1♀, Shiga Pref., Takashima City, Makinochou-hiruguchi, 35.467N / 136.037E, 23.IV.2016, S. Fujie leg. (OMNH); 1♀, Mie Pref., Shimotsuge, 5.V.1988, A. Kawazoe leg. (OMNH); 1♀, Mie Pref., Shiohama, 2.VIII.2000, A. Kawazoe leg. (OMNH); 1♀, Mie Pref., Tsu City, Hakusancho, Kakiuchi, Aoyama-kôgen, 25.VI.2011, Y. Shinogi leg. (OMNH); 2♀♀, Kyôto Pref., Miyadu City, Kamiseya, Seya-kôgen, 18.VII.2015, S. Fujie leg. (OMNH); 1♂, Kyôto Pref., Kyôtanba Town, Nagase, 17.VII.2021, S. Fujie leg. (OMNH); 1♀, Kyôto Pref., Miyama Town, Ashû Exp. Forest, 2.VII.2000, R. Matsumoto leg. (OMNH); 1♀, Kyôto Pref., Uji City, Kuroide, 12.V.2008, R. Matsumoto leg. (OMNH); 1♀, Kyôto Pref., Yawata City, Koduya, left bank of Kidu River, 19.V.2019, S. Fujie leg. (OMNH); 2♀♀, Kyôto Pref., Yawata City, Yawata-hayashinomoto, 12.VII.2021, S. Fujie leg. (OMNH); 5♀♀, same locality and collector, 26.V.2021 (OMNH); 1♀, same locality, 25.V.2021, I. Nie & S. Fujie leg. (OMNH); 1♀, Kyôto Pref., Yawata City, Yawata-takabou, 22.IV.2021, S. Fujie leg. (OMNH); 1♀, Nara Pref., Nara City, Yamachô, 16.XII.2018, S. Fujie leg. (OMNH); 1♀, Nara Pref., Mt. Nijô-san, 3.VI.1980, E. Nishida leg. (OMNH); 1♀, Nara Pref., Kamikitayama Vil., Kotochi, alt. 850 m, 16–17.VII.2017 (LT.), S. Fujie leg. (OMNH); 1♀1♂, Nara Pref., Totsukawa Vil., Mt. Shakaga-take, 10–11.VIII.2013 (LT.), S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Nose Town, Shukuno, 11.V.2019, S. Fujie leg. (OMNH); 2♀♀, Ôsaka Pref., Toyono Town, Hatsutani, 18.V.2002, R. Matsumoto leg. (OMNH); 1♀, same locality, 24.VI.2021, S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Takatsuki City, Settsukyô, 9.V.2013 (LT.), S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Takatsuki City, Akutagawa-ryokuchi, 24.VIII.2012, S. Fujie leg. (OMNH); 1♀, same locality and collector, 11.IX.2011 (OMNH); 1♀, same locality and collector, 28.IV.2011 (OMNH); 1♀, same locality and collector, 11.V.2019, collected as a cocoon (OMNH); 2♀♀, Ôsaka Pref., Takatsuki City, Mishimae, left bank of Yodogawa River, 27.X.2012, S. Fujie leg. (OMNH); 1♀, same locality, cocoon collected on 28.IV.2011, S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Shijônawate City, Ôsaka, 5.VIII.2015, Y. Inamoto leg. (OMNH); 1♀, Ôsaka Pref., Higashiosaka City, Hiroka Park, cocoon collected on 18.V.2012, S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Ôsaka City, Suminoe Ward, Nankoukita, Sakishima, 22.V.2002, Y. Kawakami leg. (OMNH); 3♀♀, Ôsaka Pref., Ôsaka City, Taishô Ward, Chishima Park, 20.V.1983, A. Ichikawa leg. (OMNH); 1♀, same locality, 18.VII.1983, emerged on 23.VII.1983, A. Ichikawa leg. (OMNH); 1♀, Ôsaka Pref., Tondabayashi City, Saijô-chô, right bank of Ishikawa River, 9.X.2016, S. Fujie leg. (OMNH); 3♀♀, Ôsaka Pref., Kawachinagano City, Oyamadachô, 25.V.2018, S. Fujie

- leg. (OMNH); 1♀, same locality and collector, 23.IX.2017 (OMNH); 1♀, same locality and collector, 23.VII.2018 (OMNH); 1♀, same locality, 16.IX.2018, M. Aoshima leg. (OMNH); 1♀, same locality, collected as a host larva of *Lemyra imparilis* on 5.XI.2018, emerged on 22.XI.2018, S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Kawachinagano City, Takihata, 20.V.2015 (LT.), S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Chihayaakasaka Vil., Mt. Kongo-san, 9.VI.2002, R. Matsumoto leg. (OMNH); 1♀, Ôsaka Pref., Kishiwada City, Nagaregi-chô, 10.VIII.2002 (LT.), Y. Kawakami leg. (OMNH); 2♂♂, Wakayama Pref., Kimino Town, Ta, 34.142N / 135.414E, 19.V.2012 (LT.), S. Fujie leg. (OMNH); 2♀♀, Wakayama Pref., Susami Town, Susami, 10.VI.2016 (LT.), S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Inagawa Town / Ôsaka Pref., Nose Town, Mt. Mikusa-yama, 24.VI.2020, S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Kôbe City, Higashinada Ward, Nishiokamoto, 25.IV.2020, S. Fujie leg. (OMNH); 2♀♀, Hyôgo Pref., Sanda City, Arimafuji Park, 34°54'55"N / 135°13'26"E, collected as a cocoon, 24.V.2014, S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Tannan Town, Mt. Shiraga-dake, alt. 280 m, 20.IX.1997, T. Teramoto leg. (MNH); 2♀♀, Kami Town, Muraoka Ward, Fukuoka, 35.4113N / 134.5998E, 15.VI.2013 (LT.), S. Fujie leg. (OMNH); 3♀, Hyôgo Pref., Kasai City, Uzuranochô, Farm of Kôbe Univ., 3.VIII.2011, K. Watanabe leg. (OMNH); 2♀♀, Hyôgo Pref., Kami Town, Niiya, Mikata-kôgen, alt. 700–1,000 m, 17.VII.2011, S. Fujie leg. (OMNH); 1♀, same locality and collector, alt. 720 m, 18.VII.2011 (OMNH); 1♀, Hyôgo Pref., Kasumi Town, Shimonohama, Kasumi Coast, 1.XI.1991, T. Ueno leg. (MNH); 1♀, Hyôgo Pref., Kami Town, Mikata-kôgen, 35.3996N / 134.5209E, 11.VII.2015 (LT.), S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Yabu City, Mt. Hyônosen, Oodanganaru, alt. 880–1280 m, 6.VIII.2011, K. Watanabe leg. (OMNH); 2♀♀, Hyôgo Pref., Yabu City, Mt. Hyônosen, Oodanganaru, 15.VII.2013, S. Fujie leg. (OMNH); 1♀, same locality, 13.VII.2013, M. Itô leg. (OMNH); 1♀, Tottori Pref., Yazu Town, Himeji, Mt. Ouginosen, 15.VIII.2020, S. Fujie leg. (OMNH); 1♀, Tottori Pref., Tottori City, 2.VI.1967, H. Aoki leg. (OMNH); 1♀, same locality, 23.IX.1973, H. Aoki leg. (OMNH); 1♀, Tottori Pref., Ketaka, Tsuyutani, 26.VI.1968, H. Aoki leg. (OMNH); 1♀, Okinoshima, Douzen, Okinoshima Town, Yuinoike, 14.VII.2019, M. & S. Fujie leg. (OMNH); 1♀, Hiroshima Pref., Shôbara City, Saijô Town, Tachieboshi Parking Lot, Mts. Hiba, alt. 1,180 m, 22–23.VII.2019 (LT.), S. Shimizu leg. (OMNH); 1♀, same locality and collector, 30–31.VII.2019 (LT.) (OMNH); 2♀♀, Yamaguchi Pref., Iwakuni City, Nishimi, 16.VIII.2000, Y. Kawakami leg. (OMNH); 3♀♀1♂, Izu-ôshima Is., Ôshima Town, Motomachi, Mt. Ômaru, Tsubakinomori, 5–31.X.2012 (MsT.), K. Tsujii leg. (KPMNH); 2♀♀2♂♂, same locality and collector, 17.VIII–5.X.2012 (MsT.) (KPMNH); 1♂, Izu-ôshima Is., Ôshima Town, Kandachi, 5.X.2012, K. Tsujii leg. (KPMNH); 1♀, Nii-jima Is., Niijima Vil., Mt. Miyatsuka, Fujimi Pass, 10.VI.2012, K. Tsujii leg. (KPMNH); 1♀, Nii-jima Is., Niijima Vil., Honson, Mt. Mukou, 11.VI.2012, K. Tsujii leg. (KPMNH); 1♀, Shikine-jima Is., Niijima Vil., Ishijirogawa Beach, 17.VI.2012, K. Tsujii leg. (KPMNH); 1♀, same locality and collector, 18.VI.2012 (KPMNH); 1♀1♂, Kôzu-shima Is., Tsuzukisawa, 23.VI.2012, K. Tsujii leg. (KPMNH); 1♀, Kôzu-shima Is., Enokigasawa, Takôwan Park, 5–6.IX.2012 (YPT.), K. Tsujii leg. (KPMNH); 1♀, Hachijô-jima Is., Hachijô Town, Mitsune, Mihara-rindô, 20.V.2012, K. Tsujii leg. (KPMNH); 3♀♀, Hachijô-jima Is., Hachijô Town, Mitsune, 10.V.2012 (YPT.), K. Tsujii leg. (KPMNH); 1♀, Hachijô-jima Is., Hachijô Town, Okagô, Nazumado, 18.V.2012, K. Tsujii leg. (KPMNH); 1♂, Hachijô-jima Is., Hachijô Town, Sueyoshi, Konsawa-rindô, 19.V.2012, K. Tsujii leg. (KPMNH); 2♀♀, Hachijô-jima Is., Hachijô Town, Kashidate, 16.V.2012, K. Tsujii leg. (KPMNH); 1♀, Hachijô-jima Is., Hachijô Town, Mt. Mihara, Konsawa-rindô, pothole, 24.IX–28.X.2012 (MsT.), K. Tsujii leg. (KPMNH); 6♀♀, Awaji-shima Is., Hyôgo Pref., Minamiawaji City, Kakinokidani-ike, 3.VI.2019, S. Shimizu leg. (OMNH); 1♀, Awaji-shima Is., Hyôgo Pref., Minamiawaji City, Fukura to Anaga, 3.VI.2019, S. Shimizu leg. (OMNH); 1♀6♂♂, Awaji-shima Is., Hyôgo Pref., Sumoto City, Chikusa, 2.VI.2019 (LT.), S. Shimizu leg. (OMNH); 6♂♂, same locality and collector, 3.V.2019 (OMNH); 64♀♀61♂♂, Awaji-shima Is., Hyôgo Pref., Sumoto City, Chikusa, Mt. Kashiwahara-yama, 3–4.VI.2019 (LT.), S. Shimizu leg. (OMNH); 1♀, Kagawa Pref., Takamatsu City, Nishiyamazakichô, 5.V.2011, S. Fujie leg. (OMNH); 1♀, Kagawa Pref., Takamatsu City, Enzachô, Katô River, 5.V.2011, S. Fujie leg. (OMNH); 2♀♀, Kagawa Pref., Mannou Town, Mt. Daisen-zan, 29.V.2022, H. Fujimoto leg. (OMNH); 2♀♀, Tsushima Is. Mitsushima Town, Oofunakoshi 34.281N / 129.352E, 2.VI.2009, R. Matsumoto leg. (OMNH); 1♀, Tsushima Is., Tsushima City, Mitsushimamachi-sumo, 31.V.2019, S. Fujie leg. (OMNH); 7♀♀, Tsushima Is., Tsushima City, Minemachi-mine, 1–2.VI. 2019 (LT.), S. Fujie leg. (OMNH); 37♀♀, same locality and collector, 2–3.VI. 2019 (LT.) (OMNH); 1♀, Tsushima Is., Tsushima City, Minemachi-kisaka, 3.VI. 2019, S. Fujie leg. (OMNH); 1♀, Tsushima Is., Tsushima City, Izuharamachi-tsutsu, 31.V.2019, S. Fujie leg. (OMNH); 4♀♀, same locality and collector, 31.V. 2019 (LT.) (OMNH); 7♀♀, Miyazaki Pref., Kobayashi City, collected as a host larva of *Spodoptera litura* feeding on *Colocasia esculenta* on 23.VII.2016, emerged in VII–VIII.2016, T. Uchigurohane leg. (OMNH); 1♀, Yaku-shima Is., Mt. Aiko-dake, alt. 150 m, 25.VIII–28.IX.2007 (MsT.), T. Yamauchi leg. (KPMNH); 1♀, Yaku-shima Is., Kankake, alt. 220 m, 28.IX.–2.XI.2007 (MsT.), T. Yamauchi leg. (KPMNH); 2♂♂, Tokara Iss., Akuseki-jima Is., Mt. Otake, 5.VIII.2013 (LT.), K. Kuramitsu leg. (KPMNH); 1♀, Amami-ôshima Is., Naze City, Chuo-rindô, alt. 250–300 m, 8.VII.2014, S. Shimizu leg. (OMNH); 3♀♀, Amami-ôshima Is., Uken Vil., Yakugachi, 5.VII.2011, S. Fujie leg. (OMNH); 3♀♀, Amami-ôshima Is., Uken Vil., Yakugachi, 5.VII.2011, S. Fujie leg. (OMNH); 1♂, Amami-ôshima Is., Setouchi Town, Mt. Yui-dake, 2.VII.2011, S. Fujie leg. (OMNH); 1♀, Okinawa-hontô Is., Kunigami Vil., Ryukyu Univ. Yona field, alt. 20 m, 27.VI.2013, M. Itô leg. (OMNH); 1♂, Okinawa-hontô Is., Mt. Yonaha-dake, 27. III.1980 (OMNH); 1♀, Ishigaki-jima Is., Ishigaki City, Mt. Buzama-dake, 11.V.2014, M. Itô leg. (OMNH); 1♀, Ishigaki-jima Is., Ishigaki City, Takeda Path, alt. 80 m, 24.III.2014, H. Nishino leg. (OMNH); 1♀, Ishigaki-jima Is., Ishigaki City, Mt. Omoto-dake, 18.V.2008, K. Watanabe leg. (OMNH); 1♀,

Ishigaki-jima Is., Ishigaki City, Mt. Banna-dake, 18.III.2012, K. Watanabe leg. (OMNH); 2♀, Iriomote-jima Is., Taketomi Town, Sonai, alt. 44 m, 20.V.2015, M. Itô leg. (OMNH); 1♀, Iriomote-jima Is., Taketomi Town, Urauchi, 12.V.2014, M. Itô leg. (OMNH); 2♀♀, Iriomote-jima Is., Taketomi Town, Funaura, V.2014, M. Itô leg. (OMNH); 1♀, same locality, 26.III.1982, E. Nishida leg. (OMNH); 1♀, Iriomote-jima Is., Taketomi Town, Ryūkyū Univ., Iriomote Station, 24°23'45"N / 123°48'09"E, 22.III–5.IV.2011 (MsT.), M. Itô leg. (OMNH); 3♀♀, Iriomote-jima Is., Taketomi Town, Ryūkyū Univ., Iriomote Station, emerged from *Mythimna separata*, 9.III.2011, S. Hiraga leg. (OMNH); 4♀♀1♂, Iriomote-jima Is., Taketomi Town, Uehara, III.2015, M. Itô leg. (OMNH); 4♀♀3♂♂, Iriomote-jima Is., Taketomi Town, Oohara, 19.III.2015, M. Itô leg. (OMNH); 1♀, Iriomote-jima Is., Taketomi Town, Oohara, Fusatoruba, alt. ca. 30 m, 24°16'37"N / 123°52'10"E, 10.V.2008, S. Yoshizawa leg. (OMNH); 3♂♂, Iriomote-jima Is., Taketomi Town, right bank of Urauchi River, alt. ca. 10 m, 24°24'8"N / 123°46'45"E, 14.V.2008, K. Watanabe leg. (OMNH); 1♀, Yonaguni-jima Is., Yonaguni Town, Mt. Urabedake, 24.449N / 123.078E, 23.VI.2013, S. Fujie leg. (OMNH); 3♂♂, Yonaguni-jima Is., Yonaguni Town, Mt. Kubura-dake, 3.V.2017, M. Makita & S. Fujie leg. (OMNH); 1♂, same locality and collectors, 30.IV.2017 (OMNH); 1♀, Yonaguni-jima Is., Yonaguni Town, Mantabaru, 24.4563N / 122.9681E, alt. ca. 115 m, 30.III.2020, R. Itô leg. (OMNH).

Meteorus rubens (Nees)

Bracon rubens Nees, 1811. Type. ♀, from Germany, lost.

Meteorus szechuanensis Fahringer, 1935. Syn. by Huddleston (1980).

Perilitus leviventris Wesmael, 1835. Syn. by Fischer (1970).

Distribution. China, Japan, Korea, Russian Far East; Nearctic, Neotropical, and Palearctic regions.

Distribution within Japan. Hokkaidô; Rishiri Is.; Honshû: Akita Pref., Iwate Pref., Yamagata Pref., *Miyagi Pref., Niigata Pref., Tochigi Pref., Ibaraki Pref., Chiba Pref., Saitama Pref., *Yamanashi Pref., Nagano Pref., Shizuoka Pref., *Fukui Pref., *Mie Pref., *Nara Pref., Ôsaka Pref., Wakayama Pref., *Hyôgo Pref., *Tottori Pref., Hiroshima Pref.; *Sadogashima Is.; Hachijojima Is.; Shikoku: Ehime Pref.; Kyûshû: Fukuoka Pref., Saga Pref., Ôita Pref., Kumamoto Pref., Miyazaki Pref., Kagoshima Pref., Yaku-shima Is. (Huddleston, 1980; Goto *et al.*, 1986; Maeto, 1990; Maeto & Nakamura, 1995; present study).

Hosts. *Agrotis exclamatoris*, *Agrotis ipsilon*, *Agrotis segetum*, *Apamea lateritia*, *Celaena leucostigma* (Noctuidae) in Japan (Goto *et al.*, 1986; Maeto, 1990). Coleophoridae, Gelechiidae, Geometridae, Lasiocampidae, Lymantriidae, other Noctuidae, Nymphalidae, Pieridae, Pyralidae, Thaumetopoeidae, Tortricidae, Yponomeutidae are also known as its hosts (Yu *et al.*, 2016). A record from dipterans (Chloropidae) is most likely erroneous.

Examined material. 1♀, Hokkaidô, Sapporo City, Hitsujigaoka, potato field, 6–7.VII.2011 (YPT.), K. Konishi leg. (OMNH); 2♀♀, same locality and collector, 7–8.VII.2011

(YPT.) (OMNH); 3♀♀, same locality and collector, 9–10.VII.2011 (YPT.) (OMNH); 1♀, same locality and collector, 20–21.VII.2011 (YPT.) (OMNH); 1♂, same locality and collector, 22–23.VII.2011 (YPT.) (OMNH); 1♀7♂♂, same locality and collector, 1–2.VIII.2011 (YPT.) (OMNH); 2♀♀7♂♂, same locality and collector, 3–6.VIII.2011 (YPT.) (OMNH); 10♀♀, same locality and collector, 15–16.VIII.2011 (YPT.) (OMNH); 3♀♀, same locality and collector, 16–17.VIII.2011 (YPT.) (OMNH); 3♀♀, same locality and collector, 17–18.VIII.2011 (YPT.) (OMNH); 3♀♀3♂♂, same locality and collector, 18–19.VIII.2011 (YPT.) (OMNH); 4♀♀3♂♂, same locality and collector, 19–20.VIII.2011 (YPT.) (OMNH); 2♂♂, Aomori Pref., Nakadomari Town, Nagadoro, left bank of Iwaki River, 7.VIII.2012, S. Fujie leg. (OMNH); 1♀, Iwate Pref., Kuzakai, 18.VIII.1979, Y. Nasu leg. (OMNH); 1♀, same locality and collector, 19.VIII.1979 (OMNH); 2♀♀, Miyagi Pref., Minamisanriku Town, Mt Tatsugane-san, 28.V.2016, S. Fujie leg. (OMNH); 1♀, same locality and collector, 5.VIII.2016 (OMNH); 1♀, Miyagi Pref., Minamisanriku Town, upstream area of Mitobe River, 7.VI.2015, S. Fujie leg. (OMNH); 9♀♀17♂♂, Miyagi Pref., Minamisanriku Town, Iriya, 28.V.2016, S. Fujie leg. (OMNH); 1♀, Miyagi Pref., Minamisanriku Town, Hadenya, 10.VIII.2015 (LT.), S. Fujie leg. (OMNH); 4♀♀, same locality and collector, 5.VIII.2016 (OMNH); 1♀ Sado Is., Niigata Pref., Sado City, Hakuundai to Mt. Myôken-zan, alt. 830–1,000 m, 4.VIII.2009, K. Watanabe leg. (OMNH); 1♀, Yamanashi Pref., Koushu City, Hikawa, Nr. Suzuran-sou, alt. 1360–1440 m, 22.V.2010 (LT.), K. Watanabe leg. (OMNH); 2♀♀, Yamanashi Pref., Nirasaki City, Marunomachi, 8–17.VII.2005 (MsT.), K. Hosoda leg. (OMNH); 1♂, Nagano Pref., Azumino City, Akashina-nakagawate, right bank of Saigawa River, 7.IX.2022, S. Fujie leg. (OMNH); 1♂, Fukui Pref., Obama City, Onyu Pass, 9.VIII.2019 (LT.), M. Itô leg. (OMNH); 1♀, Mie Pref., Fujiwara Town, 28.VII.1998, A. Kawazoe leg. (OMNH); 1♂, Nara Pref., Asuka Vil., Amakashino-oka, 26.VI.2016, S. Fujie leg. (OMNH); 1♀, Nara Pref., Kamikitayama Vil., Kotochi, alt. 850 m, 16–17.VII.2017 (LT.), S. Fujie leg. (OMNH); 2♀♀1♂, Nara Pref., Totsukawa Vil., Mt. Shakaga-take, 10–11.VIII.2013 (LT.), S. Fujie leg. (OMNH); 1♀, same locality and collector, 31.V.2014 (OMNH); 18♀♀, Ôsaka Pref., Takatsuki City, Hara, Settsukyô, 7.VII.2019 (LT.), S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Ôsaka City, Chûô Ward, Ôsakajô-Park, 22.VI.2019, S. Fujie leg. (OMNH); 4♀♀, Ôsaka Pref., Kawachinagano City, Eboshigata Park, 14.VII.2016, S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Kawachinagano City, Oyamadachô, 22.VI.2017, S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Kaizuka City, Mt. Izumi-katsuragi-san, 27.IX.2000, R. Matsumoto leg. (OMNH); 3♀♀12♂♂, Ôsaka Pref., Sennan City, estuary of Onosatogawa River, 21.IV.2019, S. Fujie leg. (OMNH); 1♀3♂♂, Ôsaka Pref., Hannan City, Ozakichô, 21.IV.2019, S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Kôbe City, Mt. Rokkô-san, alt. 900–930 m, 9.VI.2022, S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Kami Town, Niiya, alt. 750 m, 17.VII.2011, M. Itô leg. (OMNH); 2♀♀, Hyôgo Pref., Kami Town, Niiya, Mikata-kôgen, alt. 700–1000 m, 17.VII.2011, S. Fujie leg. (OMNH); 6♀♀, Hyôgo Pref., Yabu City, Mt. Hyônoson, Oodanganaru, 14–15.VII.2013 (LT.), S. Fujie leg. (OMNH); 1♀, same locality and

collector, 1.VIII.2015 (LT.) (OMNH); 1♀, Tottori Pref., Ketaka, Tsuyutani, alt. 20 m, 3.VII.1961, H. Aoki leg. (OMNH).

Meteorus ruficeps (Nees)

Perilitus ruficeps Nees, 1834. Type material lost.
Perilitus pallipes Wesmael, 1835. Syn. by Papp (1983).

Distribution. China, Japan, Korea, Russian Far East; Palaearctic region.

Distribution within Japan. Hokkaidō; Honshū: Kanagawa Pref., Yamanashi Pref., *Kyoto Pref.; Tottori Pref.; Kyūshū: Fukuoka Pref. (Maeto, 1990; Nagase, 2008; Nagase & Watanabe, 2018; present study).

Host. *Epinotia aciculana* (Tortricidae) in Japan (Maeto, 1990). Arctiidae, Gelechiidae, Geometridae, Noctuidae, Tineidae, Tortricidae, and Yponomeutidae are also known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Kyōto Pref., Miyadu City, Kamiseya, Seya-kōgen, 18–19.VII.2015 (LT.), S. Fujie leg. (OMNH).

Meteorus rugosus Maeto

Meteorus rugosus Maeto, 1986. Type. ♀, from Japan in ELKU.

Distribution. China, Japan.

Distribution within Japan. Honshū: Nagano Pref., *Toyama Pref., *Ishikawa Pref. (Maeto, 1986b; present study).

Examined material. 1♀, Toyama Pref., Nanto City, Togamura-kamimomose, alt. 664 m, 21–28.VII.2009 (MsT.), W. Watanabe leg. (KPMNH); 1♀, Ishikawa Pref., Kaga City, Mt. Kariyasu-yama, 28.VI–18.VII.2002 (MsT.), K. Esaki leg. (OMNH).

Meteorus salicorniae Schmiedeknecht

Meteorus salicorniae Schmiedeknecht, 1897. Type. ♀, from Germany in ZMHU.

Meteorus ocellatus Watanabe, 1951. Syn. by Huddleston (1980).

Distribution. Japan, Korea, Russian Far East; Palaearctic region.

Distribution within Japan. Honshū: Akita Pref., Yamagata Pref., Tochigi Pref., Tōkyō Pref., Kanagawa Pref., *Ishikawa Pref., *Hyōgo Pref.; Kyūshū: Fukuoka Pref., Ōita Pref.; Yakushima Is. (Watanabe, 1951; Maeto, 1988b; Konishi & Maeto, 2000; Katayama, 2002; Nagase & Watanabe, 2018; present study).

Hosts. No host records are available in Japan, while Pyralidae (Achroia, Aphomia, Galleria) are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Ishikawa Pref., Kaga City, Mt. Kariyasu-yama, 19–28.VI.2002 (MsT.), K. Esaki leg. (OMNH); same locality and collector, 28.VI–19.VII.2002

(OMNH); 1♀, Hyōgo Pref., Kasai City, Uzuranochō, Farm of Kōbe University, alt. 55 m, 15.VI.2011, S. Fujie leg. (OMNH).

Meteorus stellatus Fujie, Shimizu & Maeto

Meteorus stellatus Fujie, Shimizu & Maeto, 2021. Type. ♀, from Japan in NARO.

Distribution. Japan.

Distribution within Japan. Amami-ōshima Is.; Okinawa-hontō Is. (Fujie *et al.*, 2021).

Hosts. *Macroglossum passalus* (Drury) and *M. pyrrhosticta* Butler (Sphingidae) (Fujie *et al.*, 2021).

Meteorus sulcatus Szépligeti

Meteorus sulcatus Szépligeti, 1896. Type. ♀, from Croatia in TMA.

Distribution. Japan, Korea, Russian Far East; Palaearctic region.

Distribution within Japan. *Hokkaidō; Honshū: *Akita Pref., Nagano Pref., Shizuoka Pref., *Fukui Pref., *Ōsaka Pref. *Wakayama Pref.; *Awaji-shima Is., Shikoku: Tokushima Pref.; Kyūshū: Fukuoka Pref., Kumamoto Pref. (Maeto, 1986b; present study).

Hosts. No host records are available in Japan, while Buprestidae (*Agrilus*), Cerambycidae (*Eutetrappa*, *Molorchus*, *Pogonocherus*, *Semanotus*) and Chrysomelidae (*Agelastica*) are known as its hosts (Yu *et al.*, 2016).

Examined material. 4♀♀, Hokkaidō, Kuriyama Town, Takinoshita, 16.VII–5.VIII.2009 (MsT.), A. Ueda leg. (OMNH); 1♀, Hokkaidō, Sapporo City, Hitsujigaoka, 28.VII–4.VIII.2008 (MsT.), K. Konishi leg. (OMNH); 1♂, same locality and collector, 27.VI–4.VII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 4–11.VII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 25.VII–1.VIII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 4–11.VII.2012 (MsT.) (OMNH); 1♀, same locality and collector, 25.VII–1.VIII.2012 (MsT.) (OMNH); 1♀, same locality and collector, 15–22.VIII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 22–29.VIII.2011 (MsT.) (OMNH); 1♀, Akita Pref., Yokote City, Lake Mitake, alt. 190 m, 12.VIII.2015 (LT.), S. Fujie leg. (OMNH); 1♀, Fukui Pref., Ikeda Town, Mizuumi, Mt. Heko-san, alt. 1,400–1,460 m, 11.VI.2016, S. Shimizu leg. (OMNH); 1♀, Ōsaka Pref., Shijōnawate City, Ōsaka, 5.VIII.2015, Y. Inamoto leg. (OMNH); 1♂, Wakayama Pref., Susami Town, Hirose-keikoku, 16.IV.2016, H. Kodama leg. (OMNH); 4♀♀, Awaji-shima Is., Hyōgo Pref., Sumoto City, Chikusa, Mt. Kashiwahara-yama, 3–4.VI.2019 (LT.), S. Shimizu leg. (OMNH).

Meteorus takenoi Maeto

Meteorus takenoi Maeto, 1989. Type. ♀, from Japan in ELKU.

Distribution. China, Japan, Korea, Russia.

Distribution within Japan. Honshû: *Saitama Pref., *Niigata Pref., *Fukui Pref., *Hyôgo Pref., *Hiroshima Pref.; Kyûshû: Fukuoka Pref. (Maeto, 1989b; present study).

Examined material. 4♀♀, Saitama Pref., Chichibu City, Kawamata, 28–30.VIII.2012, N. Kikuchi leg. (OMNH); 1♀, Niigata Pref., Itoigawa City, Renge Spa, 20.VIII.2016 (LT.), M. Itô leg. (OMNH); 1♀, Fukui Pref., Oono City, Nukumi, alt. 610 m, 21.VI.2014 (LT.), S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Yabu City, Mt. Hyônoson, Oodanganaru, alt. 880–1,280 m, 6.VIII.2011, K. Watanabe leg. (OMNH); 2♀♀, Hiroshima Pref., Shôbara City, Saijô Town, Tachieboshi Parking Lot, Mts. Hiba, 30–31.VII.2019 (LT.), S. Shimizu leg. (OMNH).

Meteorus versicolor (Wesmael)

Perilitus versicolor Wesmael, 1835. Type. ♀, from Belgium in IRSNB.

Distribution. China, Japan, Korea, Russian Far East; Nearctic and Palaearctic regions.

Distribution within Japan. Hokkaidô; Honshû: Aomori Pref., Akita Pref., *Niigata Pref., Saitama Pref., Tôkyô Pref., Kanagawa Pref., Nagano Pref., *Gifu Pref., *Ishikawa Pref., Aichi Pref., *Shiga Pref., Mie Pref., Kyôto Pref., *Nara Pref., Ôsaka Pref., *Hyôgo Pref., *Tottori Pref., Hiroshima Pref.; Awaji-shima Is.; Shikoku: *Tokushima Pref., Kyûshû: Fukuoka Pref., Ôita Pref., Kumamoto Pref.; Tokara Is.; *Okinawa-hontô Is., Iriomote-jima Is. (Watanabe, 1937; Ogata, 1958; Huddleston, 1980; Maeto, 1989b; Maeto & Nakamura, 1995; Tanaka *et al.*, 1998; Konishi & Maeto, 2000; Kubo, 2000; Nambu, 2000; Nagase, 2004; Nagase & Watanabe, 2018; present study).

Hosts. *Leucoma salicis*, *Euproctis flava*, *Orgyia recens approximans*, *Orgyia thyellina*, *Lymantria dispar* (Lymantriidae), and *Dendrolimus spectabilis* (Lasiocampidae) in Japan (Watanabe, 1937; 1963; Maeto, 1989b). Arctiidae, Argyresthiidae, Gelechiidae, Geometridae, Lasiocampidae, Lycaenidae, Lymantriidae, Noctuidae, Nolidae, Notodontidae, Nymphalidae, Pieridae, Pyralidae, Thaumetopoeidae, Tortricidae are also known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Hokkaidô, Nakashibetsu Town, Narabigaoka, 31.VIII–4.X.2018 (MsT.), C. Nakata & M. Takada leg. (OMNH); 1♀, Hokkaidô, Nemuro City, Bettouga, 43.2512N / 145.4559E, 13.IX.2017, R. Matsumoto leg. (OMNH); 1♀, Hokkaidô, Sapporo City, Teine Ward, Mt. Teine-yama, 18.IX.2013, S. Fujie leg. (OMNH); 1♀, Hokkaidô, Chitose City, Bibi, 11.IX.2013, S. Fujie leg. (OMNH); 2♀♀, Akita Pref., Senboku City, Nyûtô Spa, alt. 680 m, 39.7980N / 140.7776E, 13.VIII.2015 (LT.), S. Fujie leg. (OMNH); 5♀♀, Niigata Pref., Itoigawa City, Renge Spa, 20.VIII.2016 (LT.), M. Itô leg. (OMNH); 1♀, Nagano Pref., Matsumoto City, Azumi, Shirahone Spa, 16.IX.2011 (LT.), K. Asahi leg. (OMNH); 1♀, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 31.VII.2012, M. Itô leg. (OMNH); 1♀, Gifu Pref., Motosu City, Nukumi Pass, 13.VII–6.IX.2014 (MsT.), S. Fujie leg. (OMNH); 1♀, Ishikawa Pref., Kaga City, Mt. Kariyasu-yama, 31.VII–31.VIII.2002 (MsT.), K. Esaki

leg. (OMNH); 1♀, Shiga Pref., Nagahama City, Nishiazachô, Sugaura, 29.VII.2017 (LT.), S. Fujie leg. (OMNH); 1♀, Kyôto Pref., Miyama Town, Ashû, Hitsukuradani, 21.VIII.1999, Y. Kawakami leg. (OMNH); 1♀, Kyôto Pref., Kyôto City, Nishikyô Ward, Ooharano, Ooharano Forest Park, 19–30.VIII.2006, Y. Miyatake leg. (OMNH); 1♀, Nara Pref., Totsukawa Vil., Mt. Shakaga-take, 11.VIII.2013 (LT.), S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Kawachinagano City, Shimizu, 34.413N / 135.580E, 26.IV.2015, S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Kishiwada City, Osawa, 3.VI.2016 (LT.), S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Kami Town, Ojira Ward, Mikata-kôgen, 35.3996N / 134.5209E, 11.VII.2015 (LT.), S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Kami Town, Ojira Ward, Mikata-kôgen, 35.397N / 134.519E, alt. 700–1,000 m, 17.VII.2011, S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Yabu City, Mt. Hyônoson, Oodanganaru, alt. 880–1,280 m, 6.VIII.2011, K. Watanabe leg. (OMNH); 1♀, Hyôgo Pref., Yabu City, Mt. Hyônoson, Oodanganaru, 13.VI.2013, S. Fujie leg. (OMNH); 2♀♀, same locality, 14–15.VII.2013 (LT.), S. Fujie leg. (OMNH); 1♀, same locality, 14.VII.2014 (LT.), K. Sakagami leg. (OMNH); 2♀♀, Tottori Pref., Yazu Town, Himeji, Mt. Ouginosen, 15–16.VIII.2020 (LT.), S. Fujie leg. (OMNH); 5♀♀, Tottori Pref., Daisen Town, Mt. Daisen, alt. 960 m, 22–23.VIII.2013 (LT.), S. Fujie leg. (OMNH); 1♀, Tottori Pref., Daisen Town, Mt. Daisen, Ninosawa, alt. 990 m, 22.VIII.2013 (LT.), M. Itô leg. (OMNH); 3♀♀, Hiroshima Pref., Shôbara City, Saijô Town, Tachieboshi Parking Lot, Mts. Hiba, 30–31.VII.2019 (LT.), S. Shimizu leg. (OMNH); 11♀♀40♂♂, Awaji-shima Is., Hyôgo Pref., Sumoto City, Chikusa, Mt. Kashiwahaya-yama, 3–4.VI.2019 (LT.), S. Shimizu leg. (OMNH); 1♀, Tokushima Pref., Miyoshi City, Higashiyasugeoi, Mt. Tsurugi-san, alt. 1,440 m, 33.870163N / 134.080078E, 2–3.VIII.2019 (LT.), S. Shimizu & J. Okayasu leg. (OMNH); 7♀♀, Tsushima Is., Tsushima City, Minemachimine, 1–2.VI.2019 (LT.), S. Fujie leg. (OMNH); 1♀, Tsushima Is., Tsushima City, Kamiagatachô-seta, alt. 40 m, 27.VII.2015, M. Itô leg. (OMNH); 1♀, Kumamoto Pref., Asagiri Town, Minagoe, 32.1194N / 130.9302E, 24.VIII.2012, R. Matsumoto leg. (OMNH); 1♀, Okinawa-hontô Is., Kunigami Vil., Yona, 27.VI.2013, collected as a cocoon, S. Fujie leg. (OMNH); 1♀, Okinawa-hontô Is., Ôgimi vil., Nûha, 26°41'37"N / 128°08'20"E, 28.XI.2008 (LT.), R. Matsumoto leg. (OMNH).

Meteorus vexator (Haliday)

(Figs. 16A–D)

Perilitus vexator Haliday, 1835. Type. ♀, from Ireland in USNM.

Distribution. Japan, Russian Far East; Palaearctic region. New to Japan.

Distribution within Japan. Honshû: *Yamanashi Pref. (present study).

Hosts. No host records are available in Japan, while Biphylidae (*Biphyllus*) are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Yamanashi Pref., Nirasaki City, Marunomachi, 8–17.VII.2005 (MsT.), K. Hosoda leg.



Fig. 16. *Meteorus vexator* (Haliday), female, from Yamanashi Prefecture (A–D); *Marshiella aichiensis* Belokobylskij, female, from Aichi Prefecture (E). — A, Habitus, lateral view; B, hind femur and tibia; C, hind tarsus, lateral view; D, metasoma, dorsal view; E, antenna, lateral view.

(OMNH); 1♀, same locality and collector, 20.VII–1.VIII.2007 (MsT.) (OMNH).

Remarks. Japanese specimens run to *M. vexator* in the key of the Russian Far East and the Western Palaearctic region (Belokobylskij, 2000g; Stigenberg & Ronquist, 2011).

Meteorus watanabei Maeto

Meteorus watanabei Maeto, 1989. Type. ♀, from Japan in ELKU.

Distribution. China, Japan, Korea.

Distribution within Japan. Hokkaidô; Honshû: Niigata Pref., *Fukui Pref., Kyôto Pref., Wakayama Pref., Tottori Pref.; Kyûshû: Kagoshima Pref.; Yaku-shima Is. (Maeto, 1989a; Fujie & Shimizu, 2015; present study).

Hosts. *Acleris kochiella* (Tortricidae) in Japan (Maeto, 1989a).

Examined material. 3♀, Hokkaidô, Yuni Town, Kuobetsu-gawa R., Brooklet beside, 2–12.VII.2007 (MsT.), N. Kuhara leg. (OMNH); 1♀, same locality and collector, 23.VII–5.VIII.2007 (MsT.) (OMNH); 1♀, Fukui Pref., Tsuruga City, marsh of Nakaikemi, 19.IX–16.X.2016 (MsT.), A. Noishiki leg. (OMNH).

Meteorus yanagiharai Sonan

Meteorus yanagiharai Sonan, 1940. Type. ♀, from Japan in TARI.

Distribution. Japan.

Distribution within Japan. Minamidaitô-jima Is. (Sonan, 1940).

Remarks. We could not find any specimens of this species.

Meteorus zinaidae Belokobylskij

Meteorus zinaidae Belokobylskij, 1987. Type. ♀, from Russia in ZISP.

Meteorus albizonalis Maeto, 1988. Syn. by Belokobylskij (2000g).

Distribution. China, Japan, Korea, Russian Far East; Eastern Palaearctic region.

Distribution within Japan. Hokkaidô; Honshû: *Miyagi Pref., *Yamanashi Pref., *Nagano Pref., *Gifu Pref., *Ishikawa Pref., *Nara Pref., *Ôsaka Pref., *Wakayama Pref., Tottori Pref., Hiroshima Pref.; *Awaji-shima Is. (Maeto, 1988b; Maeto & Nakamura, 1995; present study).

Examined material. 1♀, Hokkaidô, Nakashibetsu Town, Narabigaoka, 8–31.VIII.2018 (MsT.), C. Nakata & M. Takada leg. (OMNH); 1♀, same locality and collector, 31.VIII–4.X.2019 (MsT.), (OMNH); 2♂♂, Hokkaidô, Sapporo City, Hitsujigaoka, 21–28.VII.2008 (MsT.), K. Konishi leg. (OMNH); 1♀3♂♂, same locality and collector, 28.VII–4.VIII.2008 (MsT.) (OMNH); 2♀♀8♂♂, same locality and collector, 4–11.VIII.2008 (MsT.) (OMNH); 1♀, same locality and collector, 11–18.VIII.2008 (MsT.) (OMNH); 1♂, same locality and collector, 7–14.VIII.2009 (MsT.) (OMNH); 1♀, same locality and collector, 17–24.VIII.2010 (MsT.) (OMNH); 5♀♀4♂♂, Miyagi Pref., Minamisanriku Town, Tokura, 10.VII–6.VIII.2016 (MsT.), T. Suzuki leg. (OMNH); 1♂, Yamanashi Pref., Nirasaki City, Marunomachi, 8–17.VII.2005 (MsT.), K. Hosoda leg. (OMNH); 1♂, Nagano Pref., Azumi Vil., Shimashimadani, 15.VII.1997, R. Matsumoto leg. (OMNH); 1♀, Gifu Pref., Motosu City, Nukumi Pass, 13.VII–6.IX.2014 (MsT.), S. Fujie leg. (OMNH); 1♀, Ishikawa Pref., Kaga City, Mt. Kariyasu-yama, 31.VII–31.VIII.2002 (MsT.), K. Esaki leg. (OMNH); 2♀♀, Nara Pref., Asuka Vil., Amakashino-oka, 26.VI.2016, S. Fujie leg. (OMNH); 1♀, Nara Pref., Nara City, Nakamachi, Kinki University, 14–21.VII.2011 (MsT.), M. Itô leg. (OMNH); 1♀, same locality and collector, 31.VIII–7.IX.2011 (MsT.), (OMNH); 1♂, Nara Pref., Totsukawa Vil., Mt. Shakaga-take, 10–11.VIII.2013 (LT.), S. Fujie leg. (OMNH); 1♂, Ôsaka Pref., Kawachinagano City, Oyamadachô, 4.XII.2018, S. Fujie leg. (OMNH); 1♂, same locality and collector, 12.X.2018 (OMNH); 1♂, same locality and collector, 26.X.2018 (OMNH); 1♂, Wakayama Pref., Shingû City, Kumanogawacho, Unehata, alt. 740 m, 8.VII.2017, M. Makita & S. Fujie leg. (OMNH); 1♀, Tottori Pref., Yazu Town, Himeji, Mt. Ouginosen, 15.VIII.2020, S. Fujie leg. (OMNH); 1♀, Awaji-shima Is., Hyôgo Pref., Sumoto City, Chikusa, 2.VI.2019 (LT.), S. Shimizu leg. (OMNH).

Genus ***Microctonus*** Wesmael

Microctonus Wesmael, 1835. Type. *Perilitus aethiops* Nees, 1834, designated by Foerster, 1862.

Gamosecus Provancher, 1880. Type. *Gamosecus mellinus* Provancher, 1880, designated by Viereck, 1914.

Diagnosis. Maxillary palp with 5 segments; occipital carina complete or reduced medio-dorsally, fused with hypostomal

carina ventrally; notauli distinct; tarsal claws simple; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing absent; vein r-m of fore wing absent; first metasomal tergite petiolate, widened towards apex, open ventrally; dorsope usually absent; laterope absent; ovipositor slender, straight, or slightly down-curved; ovipositor sheath slender.

Distribution. Afrotropical, Australasian, Nearctic, Neotropical, Oceanic, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of adult (rarely exceptionally larval) Carabidae, Cerambycidae, Chrysomelidae, Curculionidae, Nitidulidae, and Tenebrionidae (Yu *et al.*, 2016).

Japanese species. Three species are known in Japan. Numerous Japanese specimens of the genus have not been identified yet.

Remarks. The monophyly of this genus has been doubtful by several authors (e.g., Muesebeck, 1936; Haeselbarth, 2008). Haeselbarth (2008) synonymized *Microctonus* with *Perilitus*, but the latest work of Nearctic species has suggested that *Microctonus* + *Orionis* is the sister group of *Perilitus* (Boring, 2010). Therefore, *Microctonus* is considered to be a valid genus in this paper.

Microctonus aethiops (Nees)

Perilitus aethiops Nees, 1834. Type. ♀, from Belgium in IRSNB.

Microctonus aethioides Loan, 1975. Syn. by Haeselbarth (2008).

Distribution. China, Japan, Korea, Russian Far East; Australasian, Nearctic, Neotropical, Oceanic, and Palaearctic regions.

Distribution within Japan. Honshû: *Aichi Pref. (present study). This species was artificially introduced into Kyûshû district (Fukuoka Pref., Saga Pref., Nagasaki Pref., Ôita Pref., Kumamoto Pref., Miyazaki Pref., Kagoshima, Pref.) (Okumura & Shiraishi, 2002; Takagi, 2013).

Hosts. *Hypea postica* (Curculionidae) in Japan (Okumura & Shiraishi, 2002; Takagi, 2013). Chrysomelidae and other Curculionidae are also known as its hosts (Yu *et al.*, 2016).

Examined material. 2♀♀, Aichi Pref., Kasugai City, Takagi, 12.IV.1966, H. Taguchi leg. (MUNJ); 1♀, same locality and collector, 19.IV.1966 (MUNJ).

Microctonus brevipetiolatus (Thomson)

(Fig. 17A, B)

Perilitus brevipetiolatus Thomson, 1892. Type. ♂, from Sweden in ZI.

Microctonus vittatae Muesebeck, 1936. Syn. by Haeselbarth (2008).

Distribution. Japan, Korea; Palaearctic and Nearctic regions.

Distribution within Japan. Honshû: Kyôto Pref., Ôsaka Pref., Hiroshima Pref. (Nagasawa, 1943; Watanabe, 1955; Maeto & Nakamura, 1995; Haeselbarth, 2008).

Hosts. *Phyllotreta striolata* (Chrysomelidae) in Japan (Nagasawa, 1943; Watanabe, 1955). Other congeneric species

are also known as its hosts (Yu *et al.*, 2016).

Examined material. 2♀♀, Ôsaka Pref., Kawachinagano City, Oyamadachô, Japanese raddish field, 26.V.2017, S. Fujie leg. (OMNH). 1♀, same locality and collector, collected with a lot of adult *Phyllotreta striolata*, 12.VI.2017 (OMNH); 16♀♀, same locality and collector, 22.VI.2017 (OMNH); 10♀♀, same locality and collector, 28.VI.2017 (OMNH); 1♀, same locality and collector, collected as a host adult of *Phyllotreta striolata* feeding on *Rhaphanus sativus* on 23.VI.2017, cocoon formed on 28.VI.2017, emerged on 6.VII.2017 (OMNH); 1♀, same locality and collector, collected as a host adult of *Phyllotreta striolata* on 17.V.2018 (OMNH).

Microctonus harpali Watanabe

Microctonus harpali Watanabe, 1954. Type. ♀, from Japan in EIHU.

Microctonus brevicornis Chen & van Achterberg, 1997.

Perilitus (Microctonus) harpali (Watanabe, 1954). Transferred by Belokobylskij (2000g).

Distribution. China, Japan, Russian Far East.

Distribution within Japan. Hokkaidô; Honshû: *Miyagi Pref., *Yamanashi Pref., *Aichi Pref., *Kyôto Pref., *Ôsaka Pref.; Shikoku: *Tokushima Pref. (Watanabe, 1954; present study).

Hosts. *Harpalus capito* (Carabidae) in Japan (Watanabe, 1954).

Examined material. 1♀ (holotype), Hokkaidô, Obihiro, emerged from host adult of *Harpalus capito*, 2–3.VIII.1950, H. Inoue leg. (EIHU); 1♀, Miyagi Pref., Minamisanriku Town, Sakanokai-tôge, 38.727N / 141.444E, alt. 300 m, 5.VI.2015, S. Fujie leg. (OMNH); 1♀, Yamanashi Pref., Nirasaki City, Marunomachi, 20.VII–10.VIII.2007 (MsT.), K. Hosoda leg. (OMNH); 1♀, Aichi Pref., Nisshin City, Komenogi, 25.VI–1.VII.2011 (MsT.), H. Seo leg. (MUNJ); 1♀, same locality and collector, 10–17.VI.2011 (MsT.) (MUNJ); 1♀, Aichi Pref., Kasugai City, Takagi (weed land), 8–14.VI.1994 (EmT.), K. Sanda leg. (MUNJ); 1♀, same locality and collector, 22–28.VI.1994 (MsT.) (MUNJ); 1♀, Aichi Pref., Kasugai City, Takagi (decid forest), 22–28.VI.1994 (EmT.), K. Sanda leg. (MUNJ); 1♀, Aichi Pref., Nagoya City, Higashi Ward, Sunadabashi, Bank of Yada River, 9.VI.2014, M. Naganawa leg. (MUNJ); 2♀♀, Kyôto Pref., Yawata City, Yawatahayashinomoto, 25.V.2021, I. Nie & S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Nose Town, Sugio, 4.VI–2.VII.2016 (MsT.), S. Fujie leg. (OMNH); 3♀♀, Tokushima Pref., Zennyuujitoh, 6–18.VI.2003 (MsT.), H. Ohara leg. (MUNJ).

Genus *Myiocephalus* Marshall

Loxocephalus Foerster, 1862. Type. *Loxocephalus longipes* Foerster, 1862. Preoccupied by *Loxocephalus* Eberhard.

Myiocephalus Marshall [in: André], 1898. Type. *Myiocephalus boops* (Wesmael, 1835).

Spilomma Morley, 1909. Type species: *Spilomma falconivibrans* Morley, 1909.

Diagnosis. Maxillary palp with 5 segments; occipital

carina complete, ventrally joining hypostomal carina; eyes of female bulging laterally and anteriorly; notauli absent; tarsal claws simple; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing absent; vein r-m of fore wing absent; first metasomal tergite petiolate, open ventrally; dorsope absent; laterope present submedially; hypopygium large; ovipositor slender, straight; ovipositor sheath slender.

Distribution. Nearctic, Oriental, and Palearctic regions.

Bionomics. This genus is associated with ant nests of the genus *Formica* (Donisthorpe, 1927; Li *et al.*, 2021).

Japanese species. One species, *M. boops* (Wesmael), is known in Japan.

Myiocephalus boops (Wesmael)

(Fig.17C–H)

Microctonus boops Wesmael, 1835. Type. ♀, from Belgium in IRSNB.

Loxocephalus longipes Foerster, 1863. Syn. by Shaw (1985).

Aphidius hedini Fahringer, 1929. Syn. by Starý (1959).

Distribution. China, Japan, Korea, Russian Far East, Taiwan; Nearctic and Palearctic regions.

Distribution within Japan. Hokkaidô; Honshû: *Kanagawa Pref., *Niigata Pref., *Nagano Pref., *Gifu Pref., *Ishikawa Pref., *Kyôto Pref., *Nara Pref., *Ôsaka Pref., *Hyôgo Pref.; Shikoku: *Tokushima Pref., *Kagawa Pref., *Ehime Pref. (Belokobylskij, 2000g; present study). Belokobylskij (2000g) recorded this species from Honshû without indicating detailed localities.

Hosts. Unknown. This species is associated with the nests of *Formica*, but no adult wasps have been reared from the ants (Donisthorpe, 1927).

Examined material. 1♂, Hokkaidô, Sapporo City, Hôheikyô, 13.VI.1980, K. Maetô leg. (NARO); 9♂♂, Hokkaidô, Shikaoi Town, Shikaribetsu, alt. 600 m, 3.VII.1980, K. Maetô leg. (NARO); 1♂, Yamagata Pref., Nishikawa Town, 38.4760N / 140.009N, 28.VII.2021, Y. Hisasue leg. (OMNH); 1♂, Kanagawa Pref., Yamakita Town, Inugoeji forest road, 20.X.2020, Y. Notsu leg. (OMNH); 1♀, Kanagawa Pref., Mts. Tanzawa, Hinokiboramaru, 20.VI.2004, H. Miyatani leg. (KPMNH); 1♀1♂, Niigata Pref., Nagaoka City, Suyoshi, Mt. Nokogiri-yama, 37°23'N 138°55' E, alt. 690 m, 21.VII–21.VIII.2014 (MsT.), S. Shimizu & R. Shimizu leg. (OMNH); 1♂, Nagano Pref., Ueda City, Sugadaira-kôgen, alt. 1300 m, 1.VIII.2012, M. Itô leg. (OMNH); 1♂, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, alt. 1720–1820 m, 5–9.VIII.2010, K. Watanabe leg. (OMNH); 1♂, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 31.VII.2013, S. Fujie leg. (OMNH); 1♂, Nagano Pref., Shimashimadani, 29.VII.1980, E. Nishida leg. (OMNH); 2♂♂, Gifu Pref., Shirakawa Vil., Shima, alt. 800 m, 24.VII–3.VIII.2010 (MsT.), R. Sugiura leg. (MUNJ); 1♂, Ishikawa Pref., Kaga City, Mt. Kariyasuyama, 19–31.VII.2002 (MsT.), K. Esaki leg. (OMNH); 1♀3♂♂, Ishikawa Pref., Hakusan, Sannomiya, 19–25.VII.2009 (MsT.), H. Fukutomi leg. (MUNJ); 1♀, same locality and collector, 21–27.VI.2009 (MsT.) (MUNJ); 2♀♀, same locality and collector, 9–22.VIII.2009 (MsT.) (MUNJ); 1♂, same locality

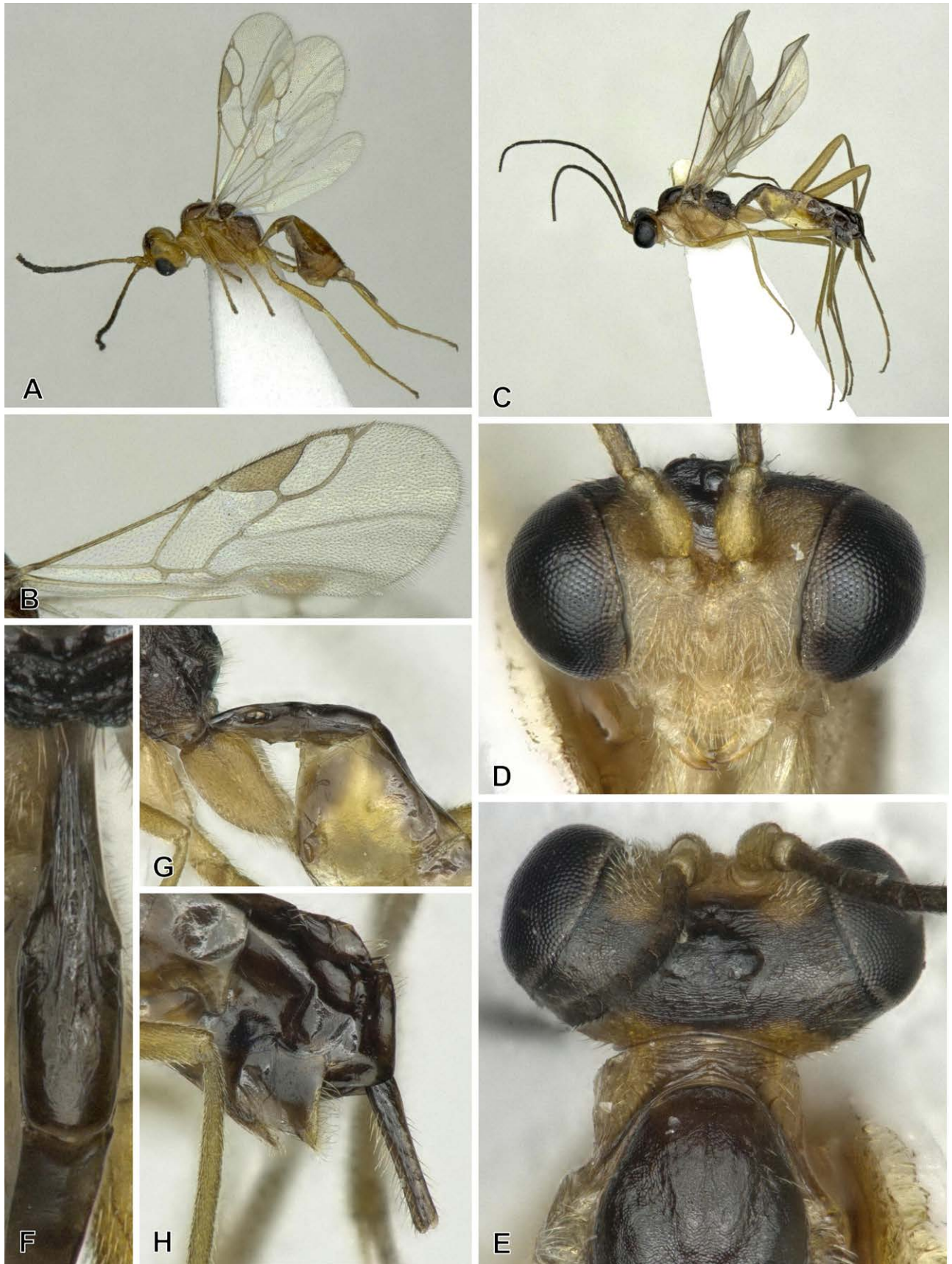


Fig. 17. *Microctonus brevipetiolatus* (Thomson), female, from Ōsaka Prefecture (A, B); *Myiocephalus boops* (Wesmael), female, from Nara Prefecture (C–H). — A, C, Habitus, lateral view; B, fore wing; D, head, frontal view; E, head, dorsal view; F, first metasomal tergite, dorsal view; G, same, lateral view, H, apical part of metasoma, lateral view.

and collector, 17–23.V.2009 (MsT.) (MUNJ); 2♂♂, Ishikawa Pref., Hakusan (Beech), Togadani, 21.VI–14.VII.2010 (MsT.), H. Fukutomi leg. (MUNJ); 2♂♂, same locality and collector, 28.VIII–15.IX.2010 (MsT.) (MUNJ); 1♂, same locality and collector, 28.IX–13.X.2010 (MsT.) (MUNJ); 3♂♂, same locality and collector, 9–16.VIII.2010 (MsT.) (MUNJ); 2♂♂, same locality and collector, 24–31.VIII.2010 (MsT.) (MUNJ); 4♂♂, same locality and collector, 13–24.IX.2010 (MsT.) (MUNJ); 1♂, Kyôto Pref., Maizuru City, Sorayama, 35.5469N/135.4314E, 17.V.2013, R. Matsumoto leg. (OMNH); 1♀3♂♂, Kyôto Pref., Kyôtango City, Mt. Ichigao-san, 22.V.2016, S. Fujie leg. (OMNH); 1♂, Nara Pref., Gose City, Mt. Kongô-san, 31.VIII.2014, S. Fujie leg. (OMNH); 1♀2♂♂, Nara Pref., Tenkawa Vil., Kitozumi, 34.19N / 135.93E, 16.VII.2016, S. Fujie leg. (OMNH); 3♂♂, Ôsaka Pref., Toyono Town, Hatsutani, 24.VI.2021, S. Fujie leg. (OMNH); 8♂♂, Ôsaka Pref., Nose Town/ Hyôgo Pref., Inagawa Town, Mt. Mikusayama, 24.VI.2010, S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Kami Town, Ojira Ward, Mikata-kôgen, 35.397N / 134.519E, alt. 700–750 m, 16.VII.2011, S. Fujie leg. (OMNH); 1♂, Tokushima Pref., Miyoshi City, Higashiyasugeoi, Mt. Tsurugi-san, alt. 1,440 m, 33.870163N / 134.080078E, 2–3.VIII.2019 (LT.), S. Shimizu & J. Okayasu leg. (OMNH); 1♂, Kagawa Pref., Mannô Town, Mt. Daisen-zan, 29.V.2022, H. Fujimoto leg. (ELKU); 1♂, Ehime Pref., Matsuyama City, Komenomachi, 2.VI.2018, Yu Hisasue leg. (ELKU).

Genus *Neoneurus* Haliday

Neoneurus Haliday, 1838. Type. *Neoneurus halidaii* Marshall, 1897.

Ecclitus Foerster, 1862. Type species: *Ecclitus clypeatus* Foerster, 1863. Syn. by Muesebeck (1931).

Sixia Snellen van Vollenhoven, 1867. Type species: *Elasmosoma aucta* Thomson, 1895. Syn. by van Achterberg (1997).

Diagnosis. Antennal segments 16; Maxillary palp with 2 segments; occipital carina absent; notauli absent; tarsal claws simple; arolium of female normal, somewhat longer than claw; Marginal cell of forewing with additional cell; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing present; vein cu-a of fore wing vertical to moderately reclivous; hind trochantellus obsolescent; first metasomal tergite sessile; dorsope and laterope absent; ovipositor compressed laterally, down-curved; ovipositor sheath small, short.

Distribution. Nearctic and Palaearctic regions.

Bionomics. Parasitoids of adult Formicidae (Yu *et al.*, 2016).

Japanese species. Only one species, *N. auctus* (Thomson), is recorded in Japan.

Neoneurus auctus (Thomson) (Fig. 18A, B)

Elasmosoma aucta Thomson, 1895. Type. ♀, from Sweden in ZI.

Distribution. Japan, Russian Far East; Palaearctic region.

Distribution within Japan. Honshû (no further locality was indicated by Belokobylskij (2000g)).

Hosts. No host records are available in Japan, while *Formica* spp. are known as its hosts (Yu *et al.*, 2016).

Genus *Orionis* Shaw

Orionis Shaw, 1987. Type. *Perilitus eximius* Muesebeck, 1955.

Diagnosis. Maxillary palp with 5 segments; occipital carina complete, fused with hypostomal carina ventrally; notauli distinct; tarsal claws simple; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent; first metasomal tergite petiolate, widened towards apex, closed ventrally at basal 1/2; dorsope and laterope absent; ovipositor slender, straight; ovipositor sheath slender.

Distribution. Neotropical, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of adult Coleoptera (Yu *et al.*, 2016).

Japanese species. One species, *O. coxator* (Belokobylskij), is known in Japan.

Orionis coxator (Belokobylskij) (Fig. 18C, D)

Perilitus coxator Belokobylskij, 1995. Type. ♀, from Russia in ZISP.

Orionis coxator (Belokobylskij, 1995). Transferred by Broad & Stigenberg (2021).

Distribution. Japan, Russian Far East.

Distribution within Japan. Hokkaidô; Honshû: *Niigata Pref., *Shiga Pref., *Ôsaka Pref.; Shikoku: Tokushima Pref. (Belokobylskij, 2000g; present study). Belokobylskij (2000g) recorded this species from Hokkaidô and Shikoku without indicating detailed localities.

Examined material. 1♀, Hokkaidô, Engaru Town, Urashimanai-rindô, alt. 350 m, 43°53'09"N / 143°26'41"E, 13.VII.2012, M. Itô leg. (OMNH); 1♀, Hokkaidô, Sapporo City, Teine Ward, Mt. Teine-yama, 18.IX.2013, S. Fujie leg. (OMNH); 1♀, Niigata Pref., Myôkô City, Mt. Sasagamine, 23.VIII.2016, M. Itô leg. (OMNH); 1♀, Niigata Pref., Myôkô City, Suginosawa, Mt. Sasagamine, alt. 1,200–1,300 m, 36°52'N / 138°03'E, 13.VII.2015, S. Shimizu leg. (OMNH); 1♀, Shiga Pref., Shiga Town, Mt. Hira-san, Yakumogahara, 16.VI.1999, R. Matsumoto leg. (OMNH); 1♀, Ôsaka Pref., Toyono Town, Hatsutani, 24.VI.2021, S. Fujie leg. (OMNH); 2♀♀, Tokushima Pref., Miyoshi City, Higashiyasugeoi, Mt. Tsurugi-san, alt. 1,440 m, 33.870163N / 134.080078E, 2–3.VIII.2019 (LT.), S. Shimizu & J. Okayasu leg. (OMNH).

Remarks. Japanese specimens examined run to *O. coxator* in the key by Broad & Stigenberg (2021), while they have the median part of the face yellow.

Genus *Perilitus* Nees

Perilitus Nees, 1818. Type. *Bracon rutilus* Nees, 1812.

Diagnosis. Maxillary palp with 5 segments; occipital

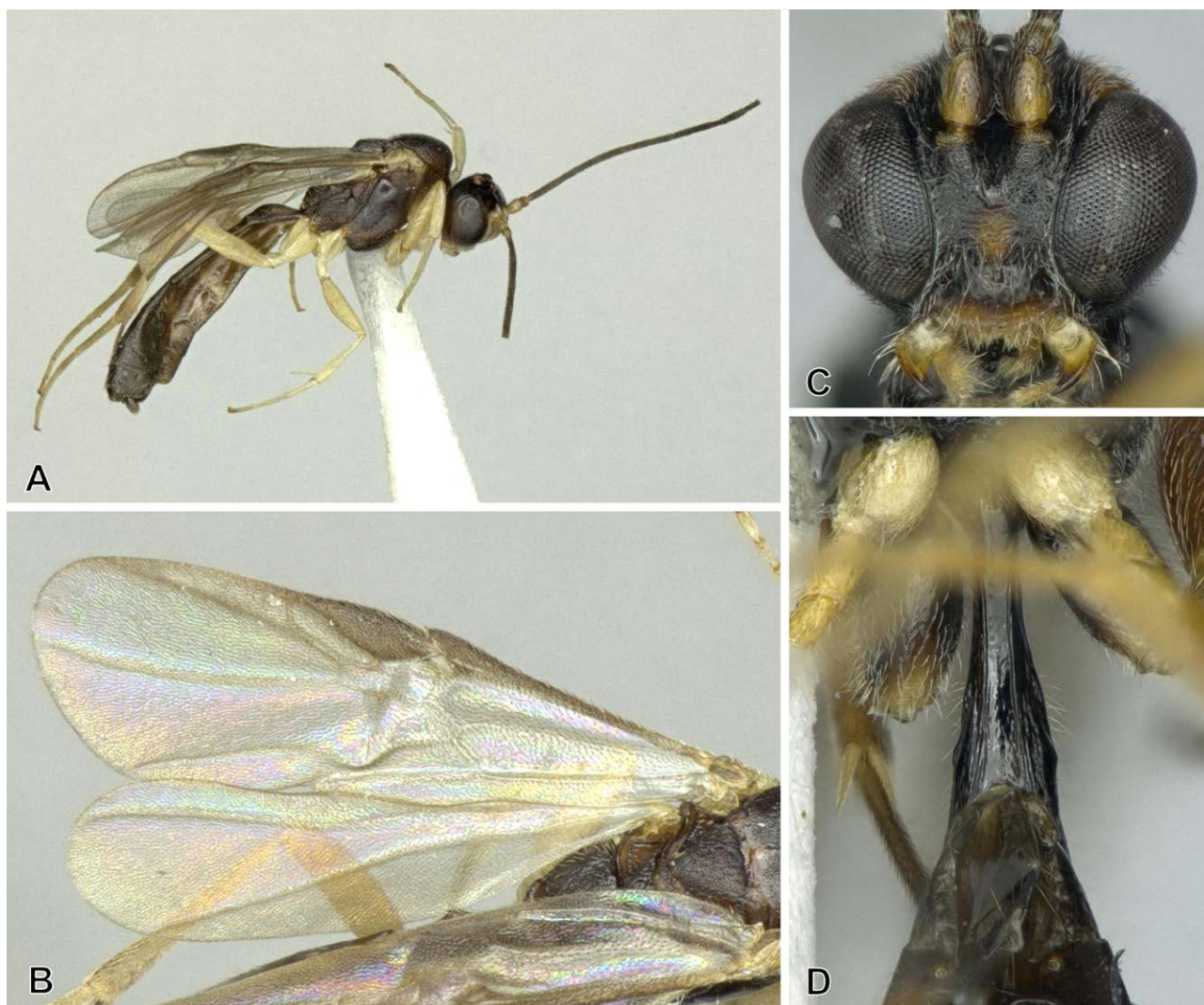


Fig. 18. *Neoneurus* sp., male, from Aomori Prefecture (A, B); *Orionis coxator* (Belokobylskij), female, from Ōsaka Prefecture (C, D). — A, Habitus, lateral view; B, fore wing; C, head, frontal view; D, first metasomal tergite, ventral view.

carina complete or reduced medio-dorsally, fused with hypostomal carina ventrally; notauli distinct; tarsal claws simple; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent; first metasomal tergite petiolate, widened towards apex, open ventrally; dorsope and laterope usually absent; ovipositor slender, straight, or down-curved; ovipositor sheath slender.

Distribution. Afrotropical, Australasian, Nearctic, Neotropical, Oceanic, Oriental and Palearctic regions.

Bionomics. Parasitoids of adult Brentidae, Carabidae, Cerambycidae, Chrysomelidae, Coccinellidae, Curculionidae, Eumastacidae, Melandryidae, and Tenebrionidae (Coleoptera) (Yu *et al.*, 2016).

Japanese species. One species, *P. retusus* (Ruthe), had been known in Japan. Another species, *P. kokujevi* Tobias, is recorded from Japan for the first time. Several unidentified species remain in Japanese materials.

***Perilitus kokujevi* Tobias**
(Fig. 19A)

Perilitus kokujevi Tobias, 1986. Type. ♀, from Russia in ZISP.

Perilitus lateropus Chen & van Achterberg, 1997. Syn. by Belokobylskij (2000g).

Perilitus liui Chen & van Achterberg, 1997. Syn. by Belokobylskij (2000g).

Distribution. China, Japan, Russian Far East; Palearctic region. New to Japan.

Distribution within Japan. Honshū: *Nagano Pref., *Toyama Pref. *Tottori Pref. (present study).

Examined material. 2♀♀, Nagano Pref., Chino City, Tamagawa, Mt. Yatsugatake, alt. 1,500–1,720 m, 35.982N / 138.326E, 22.VIII.2012, S. Fujie leg. (OMNH); 1♂, Toyama Pref., Toyama City, Arimine, Jūrōdani, alt. 1120 m, 21–28.VII.2009 (MsT.), M. Watanabe *et al.* leg. (KPMNH); 1♀, Tottori Pref., Wakasa Town, Mt. Hyōnoson, alt. 1,000–1,350 m, 35°21'N / 134°30'E, 17.VII.2011, K. Watanabe leg. (OMNH).

Remarks. Japanese specimens run to *P. kokujevi* in the key of Russian Far East species (Belokobylskij, 2000g).

***Perilitus retusus* (Ruthe)**

Micoctonus retusus Ruthe, 1856. Type. ♀, from Germany in NHM.

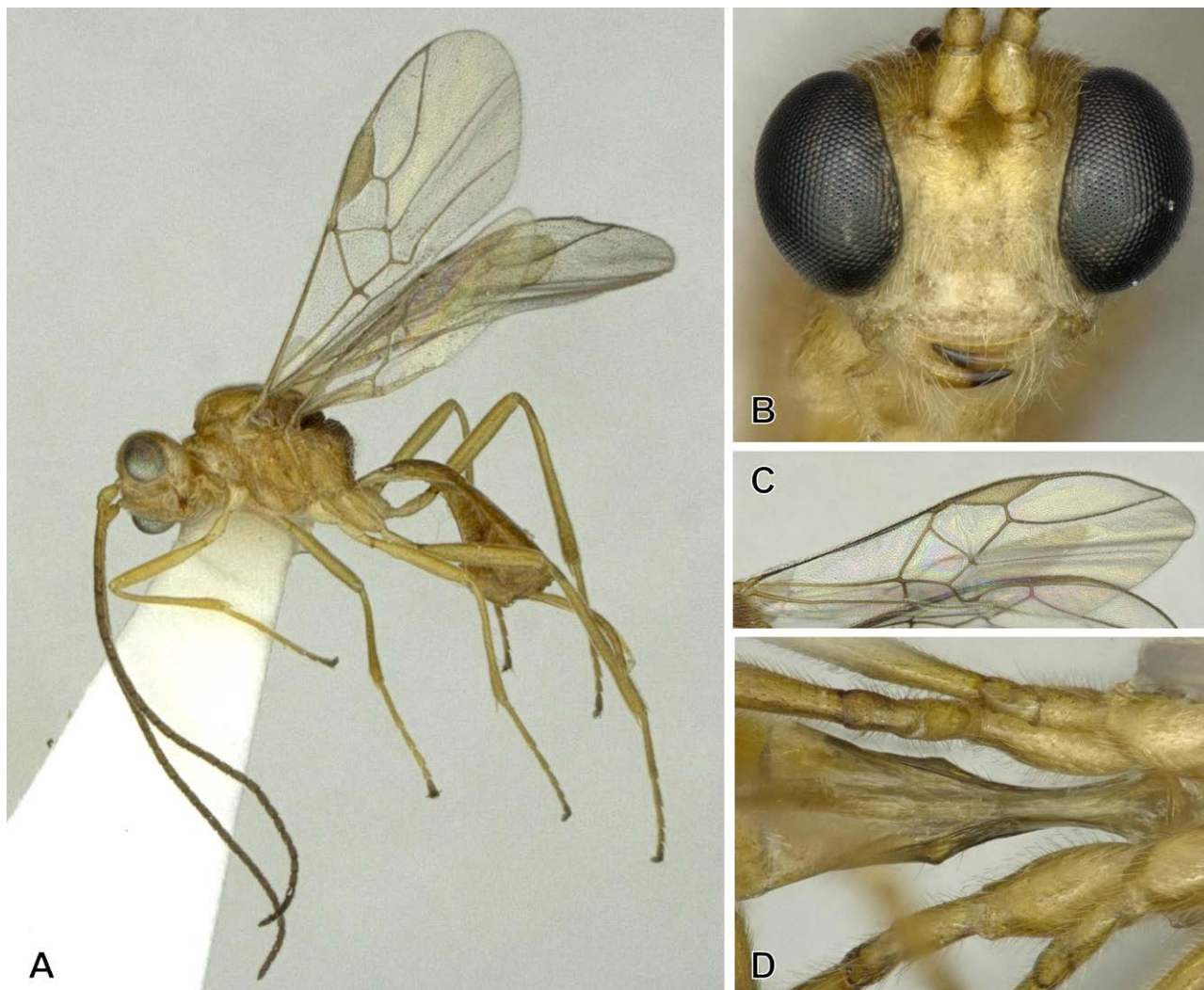


Fig. 19. *Perilitus kokujevi* Tobias, female, from Nagano Prefecture (A); *P. sp.*, female, from Tottori Prefecture (B–D). — A, Habitus, lateral view; B, head, frontal view; C, fore wing; D, first metasomal tergite, ventral view.

Perilitus retusus (Ruthe, 1856). Transferred by Belokobylskij *et al.* (2003).

Distribution. Japan; Western Palaearctic region.

Distribution within Japan. Hachijō-jima Is. (Haeselbarth, 2008).

Hosts. No host records are available in Japan, while Carabidae (*Harpalus*) and Cerambycidae (*Herophila*) are known as its hosts (Yu *et al.*, 2016).

Genus *Peristenus* Foerster

Peristenus Foerster, 1862. Type. *Microctonus barbiger* Wesmael, 1835 [= *Leiophron pallipes* Curtis, 1833].

Diagnosis. Maxillary palp with 5 segments; occipital carina complete and fused with hypostomal carina ventrally, or not directly connected and connected by a branch; notauli distinct; tarsal claws simple; vein M+CU1 of fore wing unsclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent; first metasomal tergite petiolate, widened towards apex, fused ventrally, or touching basally; dorsope and laterope absent; ovipositor slender, distinctly down-

curved; ovipositor sheath short.

Distribution. Afrotropical, Nearctic, Neotropical, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of Chrysomelidae, Melandryidae, Nitidulidae (Coleoptera), Cicadellidae, Miridae (Hemiptera) (Yu *et al.*, 2016).

Japanese species. One species, *Peristenus pacificus* (Belokobylskij), had been known in Japan. Two species are newly recorded for Japanese fauna. Further studies are needed for the genus because numerous Japanese specimens of the genus have not been identified yet.

Peristenus accinctus (Haliday)

(Fig. 20A–G)

Leiophron accinctus Haliday, 1835. Type. Probably ♀, from Great Britain in NMI.

Microctonus laeviventris Ruthe, 1856. Syn. by Belokobylskij *et al.* (2003).

Distribution. Japan, Korea; Palaearctic region. New to Japan.

Distribution within Japan. Honshū: *Kyōto Pref., *Ōsaka

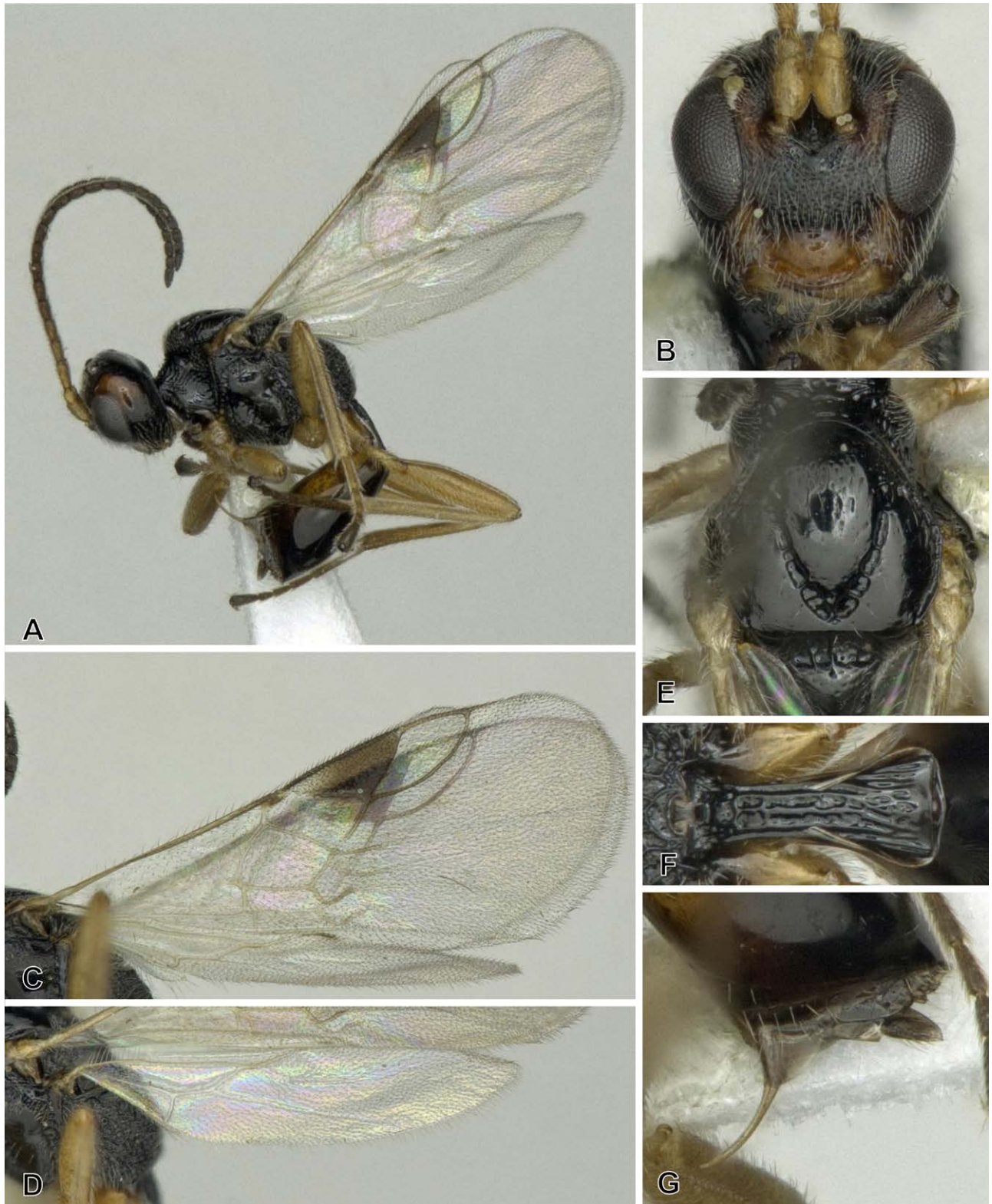


Fig. 20. *Peristenus accinctus* (Haliday), female, from Kyôto Prefecture. — A, Habitus, lateral view; B, head, frontal view; C, fore wing; D, hind wing; E, mesonotum, dorsal view; F, first metasomal tergite, dorsal view; G, apical part of metasoma, lateral view.

Pref. (present study).

Hosts. No host records are available in Japan, while Miridae (Lygocoris) and Nitidulidae (Meligethes) are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♂, Nagano Pref., Mt. Kisokomagatake, 13.VII.1967, H. Taguchi leg. (MUNJ); 1♂, same locality and

collector, 16.VII.1967 (MUNJ); 10♀♀, Kyôto Pref., Yawata City, Morigaito, left bank of Kidu River, 17.VI.2018, S. Fujie leg. (OMNH); 1♀, Kyôto Pref., Yawata City, Yawatahayashinomoto, 12.VII.2021, S. Fujie leg. (OMNH); 1♀6♂♂, Ôsaka Pref., Takatsuki City, Uono, right bank of Yodogawa River, 20.V.2018, S. Fujie leg. (OMNH); 1♀, Hyôgo Pref., Sayo

Town, Nikata, 14.V.2011, S. Fujie leg. (OMNH).

Remarks. Japanese male specimens run to *P. spretus* (junior synonym of *P. accinctus*) in the key of Chinese species and *P. laeviventris* (junior synonym of *P. accinctus*) in the key of Russian Far East species (Chen & van Achterberg, 1997; Belokobylskij, 2000g). Japanese female specimens run to *P. laeviventris* in the key of Russian Far East species and agree well with the redescription in the key (Belokobylskij, 2000g).

***Peristenus pacificus* (Belokobylskij)**

Leiophron (*Peristenus*) *pacificus* Belokobylskij, 1995. Type. ♀, from Russia in ZISP.

Distribution. Japan, Korea, Russian Far East.

Distribution within Japan. Hokkaidô (Belokobylskij, 2000g).

***Peristenus xanthos* Chen & van Achterberg (Fig. 21A–F)**

Peristenus xanthos Chen & van Achterberg, 1997. Type. ♀, from China in ZAU.

Distribution. China, Japan, Russian Far East. New to Japan.

Distribution within Japan. Honshû: *Ibaraki Pref., *Gifu Pref., *Ôsaka Pref., *Hyôgo Pref. (present study).

Hosts. Adult *Stenotus rubrovittatus* (Miridae) in Japan. This is the first host record of this species.

Examined material. 5♀4♂♂, Ibaraki Pref., Jôsô City, Jôjamachi, Azumachô, collected as a parasitoid of adult *Stenotus rubrovittatus*, emerged on 13–24.VI.2009, K. Oku leg. (OMNH); 1♂, Ibaraki Pref., Tsukuba City, Tennoudai, Tsukuba Univ., alt. 25 m, 25.VI.2013, S. Shimizu leg. (OMNH); 1♀, Gifu Pref., Takayama City, Hirayu-ootaki Park, 4.VIII.2012, S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Takatsuki City, Udono, right bank of Yodogawa River, 20.V.2018, S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Habikino City, Shakudo, 20.IX.2020, S. Fujie leg. (OMNH); 13♀2♂♂, Hyôgo Pref., Shisou City, Yamazakichô-koudani, 16.IX.2019, S. Fujie leg. (OMNH); 2♀1♂, Hyôgo Pref., Sayo Town, Nikata, 14.V.2011, S. Fujie leg. (OMNH).

Remarks. Japanese specimens run to *P. xanthos* in the keys of Chinese species and Russian Far East species and agree well with the original description and the redescription in the latter key (Chen & van Achterberg, 1997; Belokobylskij, 2000g).

Genus *Proclithrophorus* Tobias & Belokobylskij

Proclithrophorus Tobias & Belokobylskij, 1981. Type. *Proclithrophorus mandibularis* Tobias & Belokobylskij, 1981.

Diagnosis. Maxillary palp with 5 segments; length of scapus 2.0× width; occipital carina narrowly absent medio-dorsally and fused with hypostomal carina ventrally, or reduced ventrally; notauli present; tarsal claws simple; vein

M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing absent; vein r-m of fore wing absent; first metasomal tergite petiolate, widened towards apex, fused ventrally at basal half; dorsope large; laterope absent; ovipositor slender, straight; ovipositor sheath slender.

Distribution. Palaearctic and Oriental regions. This genus is newly recorded from the Oriental region for the first time.

Bionomics. Unknown.

Japanese species. Here we describe a new species of the genus from the subtropical area of Japan. This is a new record for the genus from Japan as well as from the Oriental region.

***Proclithrophorus orientalis* sp. nov. (Fig. 22A–J)**

Type material. Holotype, ♀, “JAPAN: Ooganeke, Yamato Vil., Amamioshima Is., Kagoshima Pref., 11–25.V.2019 A. Yoshikawa & F. Fujita leg.” (OMNH). Paratype, 1♀, same as holotype (NARO), 1♀, Ôkuni bridge, ca. 200 m alt., Ôkuni rindô, Hama, Kunigami Vil., Okinawa-hontô Is., LT., 29–30. III.2019, S. Shimizu leg. (OMNH).

Etymology. The name refers to the region of the type locality.

Description. ♀ (holotype, Fig. 22A–J). Body length 2.1 mm.

Head (Fig. 22B–F). Width of head 1.9× median length and 1.7× wider than mesonotum. Antennae with 22 segments, length of 2nd segment 2.0× width, length of 3rd and 4th segment 2.1× and 2.3× their width, respectively, length of 4th one 1.1× 3rd one, penultimate one 1.7× width. Eye glabrous, length of eye 1.3× length of temple in dorsal view, temple gradually narrowed behind eyes, strongly narrowed posteriorly, temple, vertex and frons smooth, face absent. Clypeus horizontally protruding forwards and semicircular. Maxillary palp with 5 segments, Labial palp with 3 segments, Occipital carina narrowly absent medio-dorsally, joining hypostomal carina ventrally. OOL / OD = 1.8. POL / OD = 3.8.

Mesosoma (Fig. 22G, H). Mesosoma length 1.4× height. Side of pronotum weakly crenulate medially remainder largely smooth. Prosternum smooth. Mesoscutum smooth, notauli distinctly crenulate, with longitudinal carina medio-posteriorly. Scutellar suture with longitudinal carina. Scutellum smooth and weakly convex. Mesopleuron smooth, anterior and posterior border narrowly crenulate, precoxal sulcus widely crenulate. Mesosternum crenulate medially, remainder smooth. Metapleuron coarsely rugose. Propodeum smooth basally, with short median carina and areolated anteriorly, posterior areolar area concave, weakly coarsely rugose.

Wings (Fig. 22I). Fore wing 2.0 mm in length, 1-R1 / pterostigmal length = 0.72, pterostigmal length 3.1× width. vein 1-SR+M absent. Hind wing with 1r-m / 2-SC+R = 0.9.

Legs. Hind leg: coxa smooth, femur 5.3× longer than wide, length of outer and inner tibial spurs 0.3× and 0.4× hind basitarsus, respectively.

Metasoma (Fig. 22J). First metasomal tergite longitudinally striate with median carina, distinctly gradually widened towards apex, ventrally fused, its length 2.1× apical width,



Fig. 21. *Peristenus xanthos* Chen & van Achterberg, female, from Hyôgo Prefecture. — A, Habitus, lateral view; B, head and mesonotum, dorsal view; C, head, postero-ventral view; D, first metasomal tergite, dorsal view; E, same, ventral view; F, same, ventral view.

dorsope large, laterope absent, Second and following tergites smooth and shining. Hypopygium glabrous. Ovipositor sheath with sparse setae, its length $0.38\times$ forewing. Ovipositor slightly down-curved.

Color. Dark brown to brown, palpi, mandible except for apical part, fore and middle coxae, trochanters, hypopygium and ovipositor basally pale yellow, basal 3 segments of antenna, propleuron, pronotum, mesonotum, mesopleuron, tegulae, remainder legs, remainder ovipositor yellow to yellowish brown, wing hyaline, pterostigma brown, veins brown to light brown.

Male. Unknown.

Variation. Body length 2.1–2.6 mm. Width of head $1.8\text{--}1.9\times$ median length. Length of 2nd antennal segment $2.0\text{--}2.1\times$ width, length of 3rd and 4th segment $2.0\text{--}2.1\times$ and $2.3\text{--}2.5\times$ their width, respectively, length of 4th one $1.1\text{--}1.3\times$ 3rd one, penultimate one $1.6\text{--}1.7\times$ width. Length of eye $1.2\text{--}1.3\times$ length of temple in dorsal view. $\text{OOL} / \text{OD} = 1.8\text{--}1.9$. $\text{POL} / \text{OD} = 3.5\text{--}4.0$. Mesosoma length $1.4\text{--}1.5\times$ height. Fore wing 2.0–2.4 mm in length, $1\text{-R1} / \text{pterostigmal length} = 0.70\text{--}0.73$,

$\text{pterostigmal length} = 3.0\text{--}3.2\times$ width. Hind wing with $1\text{-r-m} / 2\text{-SC+R} = 0.90\text{--}0.97$.

Distribution. Japan.

Distribution within Japan. Amami-ôshima Is.; Okinawa-hontô Is.

Hosts. Unknown.

Remarks. The type specimens of *P. orientalis* sp. nov. were compared with the Eastern Palaearctic species, *P. mandibularis* Tobias & Belokobylskij, 1981, by the original and additional descriptions given by Belokobylskij (2000g) and Vikberg & Koponen (2001), and also by the examination of a female specimen from Primorski Krai, Russia, identified by Belokobylskij and deposited in NARO. This species is closely resembling *P. mandibularis*, but differs in having the smaller body length (2.1–2.6 mm in *orientalis*, 2.6–3.5 mm in *mandibularis*), the occipital carina narrowly absent medio-dorsally (widely absent medio-dorsally in *mandibularis*) (Fig. 22F) and fused with the hypostomal carina ventrally (the occipital carina reduced ventrally in *mandibularis*), the lighter mesonotum (the color of head and mesonotum is distinctly

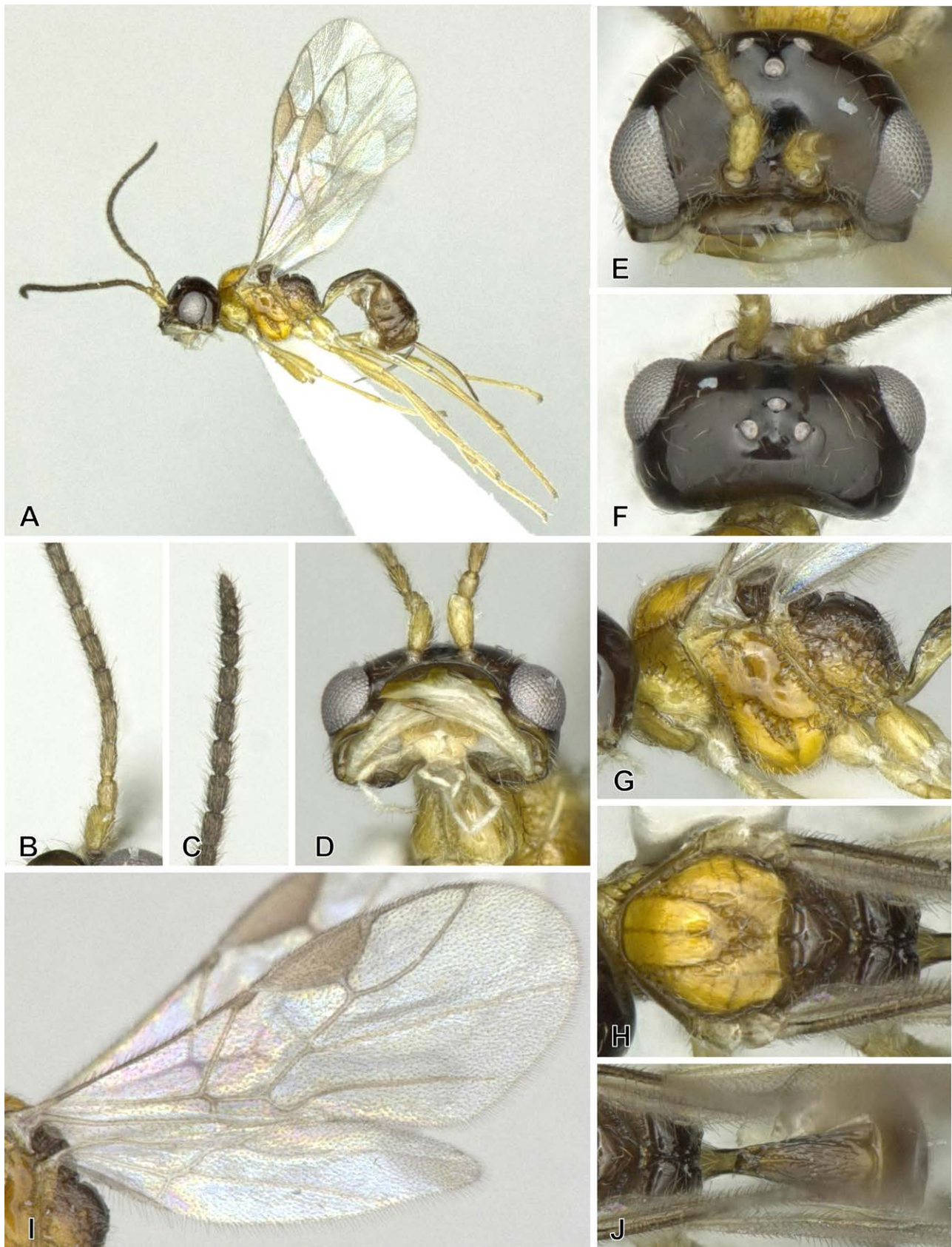


Fig. 22. *Proclithrophorus orientalis* sp. nov., female, holotype. — A, Habitus, lateral view; B, basal antennal segments; C, apical antennal segments; D, head, ventral view; E, head, frontal view; F, same, dorsal view; G, mesosoma, lateral view; H, mesosoma dorsal view; I, wings; J, first metasomal tergite, dorsal view.

different in *orientalis*, but resembles in *mandibularis*) (Figs. 22A, F, H).

Genus *Pygostolus* Haliday

Pygostolus Haliday, 1833. Type. *Ichneumon sticticus* Fabricius, 1798.

Diagnosis. Maxillary palp with 5 segments; apical antennal segment with an apical spine; occipital carina complete and fused with hypostomal carina ventrally; notauli present; mesosternum distinctly flattened and feltly setose in female; tarsal claws simple, with dense, whitish setae ventrally; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent; first metasomal tergite sessile, parallel-sided behind spiracles; dorsope large and deep; laterope large and deep; ovipositor strongly compressed, straight or down-curved; ovipositor sheath slender.

Distribution. Nearctic, Neotropical, and Palaeartic regions.

Bionomics. Parasitoids of Argidae, Braconidae, Tenthredinidae (Hymenoptera), Cecidomyiidae (Diptera), Cerambycidae, Chrysomelidae, Curculionidae (Coleoptera), Depressaridae, Notodontidae, Psychidae, Tortricidae (Lepidoptera) (Yu *et al.*, 2016). Host records other than Coleoptera need to be confirmed.

Japanese species. One species, *P. falcatus* (Nees), is newly recorded from Japan. Totally, three species are known in Japan.

Pygostolus falcatus (Nees) (Fig. 23A–E)

Leiophron falcatus Nees, 1834. Type. ♀, from Netherlands in NMM.

Distribution. China, Japan, Russian Far East; Nearctic region (introduced), Palaeartic region. New to Japan.

Distribution within Japan. *Hokkaidō; Honshū: *Niigata Pref., *Nagano Pref., *Nara Pref. (present study).

Hosts. No host records are available in Japan, while Braconidae, Cecidomyiidae, Chrysomelidae and Curculionidae are known as its hosts (Yu *et al.*, 2016). The records of Braconidae and Cecidomyiidae need to be confirmed.

Examined material. 1♀, Hokkaidō, Sapporo City, Mt. Soranuma-dake, alt. 100–500 m, 15.VI.1980, H. Takemoto leg. (NARO); 1♀, Hokkaidō, Sapporo City, Hōhei-kyō, 13.VI.1980, K. Maetō leg. (NARO); 1♀, Hokkaidō, Hidaka Town, Uenzaru-gawa, natural forest, alt. 1,160 m, 42.55N / 142.45E, 1–28.VIII.2007 (MsT.), A. Ueda leg. (OMNH); 1♂, Niigata Pref., Itoigawa City, Renge Spa, 20.VIII.2016 (LT.), M. Itō leg. (OMNH); 1♀, Nagano Pref., Hijiri-highland, 4.VIII.1965, S. Katsuya leg. (NARO); 3♀, Nara Pref., Kamikitayama Vil., Kotochi, alt. 850 m, 16–17.VII.2017 (LT.), S. Fujie leg. (OMNH);

Remarks. Japanese specimens examined run to *P. falcatus* in the keys for the Russian Far East (Belokobylskij, 2000g) and China (Chen & van Achterberg, 1997).

Pygostolus minax Belokobylskij

Pygostolus minax Belokobylskij, 2000. Type. ♀, from Japan in EIHU.

Distribution. Japan.

Distribution within Japan. Hokkaidō (Belokobylskij, 2000d).

Examined material. 1♀ (holotype), Hokkaidō, Shikotsuko, 30.VI.1966, K. Kushigemati leg. (EIHU).

Pygostolus multiarticulatus (Ratzeburg)

Blacus multiarticulatus Ratzeburg, 1852. Type. Sex unknown, from Germany in DEI.

Blacus falcatus Wesmael, 1838. Syn. by Dalla Torre (1898).

Pygostolus septentrionalis Watanabe, 1937. Syn. by Belokobylskij (2000g).

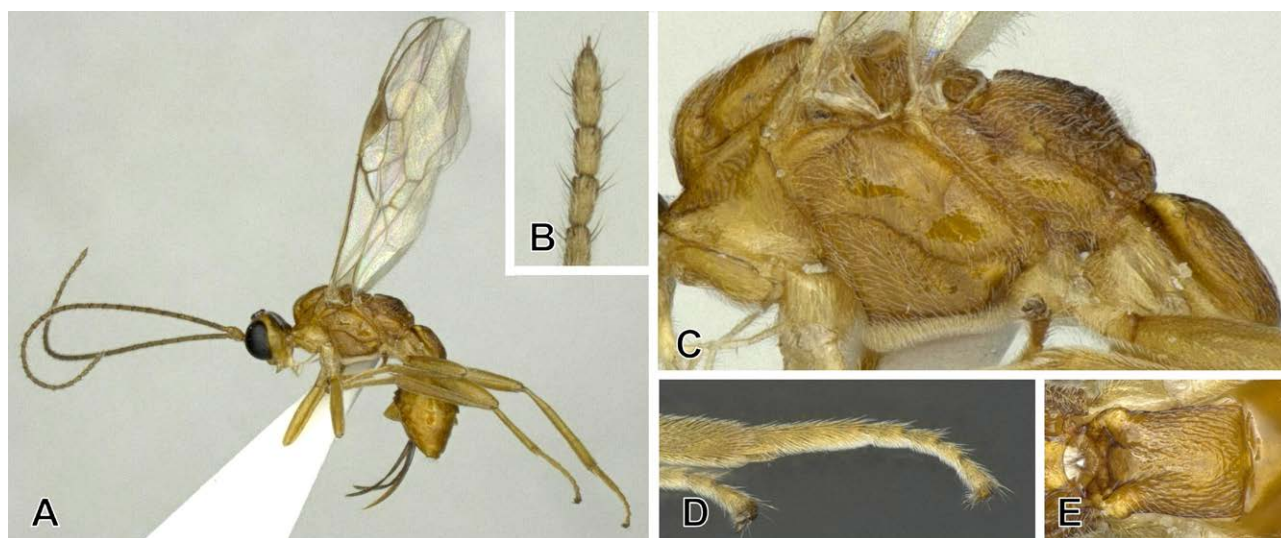


Fig. 23. *Pygostolus falcatus* (Nees), female, from Hyōgo Prefecture. — A, Habitus, lateral view; B, apical antennal segments; C, mesosoma and first metasomal tergite, lateral view; D, hind tarsus; E, first metasomal tergite, dorsal view.

Distribution. Japan, Russian Far East; Palaearctic region.

Distribution within Japan. Hokkaidô; Honshû: Fukushima Pref. (Watanabe, 1937; van Achterberg, 1992).

Hosts. No host records are available in Japan, while Cerambycidae, Curculionidae, and Psychidae are known as its hosts (Yu *et al.*, 2016).

Examined material. 1 ♀ (holotype of *Pygostolus septentrionalis*), Hokkaidô, Maruyama, 24.VI.1930, C. Watanabe leg. (EIHU).

Genus *Ropalophorus* Curtis

Ropalophorus Curtis, 1837. Type. *Ropalophorus clavicornis* Wesmael, 1835.

Rhopalophorus Blanchard, 1840. Unjustified emendation, preoccupied by *Rhopalophorus* Serville, 1834.

Eustalocerus Foerster, 1863. New name for *Rhopalophorus* Blanchard.

Diagnosis. Antenna stout, clavate, with 9–10 segments; maxillary palp with 5 segments; occipital carina complete; notauli present; tarsal claws simple; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent; first metasomal tergite petiolate, widened towards apex, fused ventrally; dorsope large and deep, laterope absent; ovipositor strongly compressed, down-curved; ovipositor sheath slender.

Distribution. Nearctic, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of adult Curculionidae (Yu *et al.*, 2016).

Japanese species. One species, *R. clavicornis* (Wesmael), is known in Japan.

Ropalophorus clavicornis (Wesmael)

Microctonus clavicornis Wesmael, 1835. Type. ♀, from Belgium in IRSNB.

Distribution. Japan. Russian Far East; Nearctic and Palaearctic regions.

Distribution within Japan. Hokkaidô (Watanabe, 1961; present study).

Hosts. No host records are available in Japan, while Curculionidae (*Hylesinus*, *Ips*, *Onthotomicus*) are known as its hosts (Yu *et al.*, 2016).

Examined material. 1 ♀, Hokkaidô, Tomakomai, 7.VIII.1957, K. Kamijô leg. (EIHU).

Genus *Spathicopsis* van Achterberg

Spathicopsis van Achterberg, 1977. Type. *Spathicopsis flavocephala* van Achterberg, 1977.

Diagnosis. Maxillary palp with 6 segments; occipital carina complete and fused with hypostomal carina ventrally; notauli present; tarsal claws simple; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing absent; vein r-m of fore wing absent; first metasomal tergite subsessile; dorsope

large and deep; laterope large and deep; ovipositor slender, straight; ovipositor sheath slender.

Distribution. Nearctic, Oriental and Palaearctic regions.

Bionomics. Unknown.

Japanese species. Only one species, *S. flavocephala* van Achterberg, is known for the genus. All the specimens from Japan are identified as this species.

Spathicopsis flavocephala van Achterberg (Fig. 24A–D)

Spathicopsis flavocephala van Achterberg, 1977. Type. ♀, from USA in CNC.

Distribution. China, Japan, Russian Far East; Nearctic and Palaearctic regions. New to Japan.

Distribution within Japan. *Hokkaidô; Honshû: *Fukushima Pref., *Fukui Pref., *Kyôto Pref.; Kyûshû: *Miyazaki Pref. (present study).

Examined material. 1 ♀ (holotype), “King Salmon, Naknek R. Alaska 3-VIII-1952 J. B. Hartley” (CNC); 2 ♂♂, Hokkaidô, Akkeshi Town, Sannushi, Bekaubeushi Marsh, 43.0994N/144.8594E, MT3-II, 4.VII–8.VIII.2017 (MsT.), R. Matsumoto leg. (OMNH); 1 ♀, Fukushima Pref., Showa Vil., Mt. Hakase, alt. 1000 m, beech forest, 24.VIII–19.IX.1998, T. Muroi leg. (MUNJ); 1 ♂, Fukui Pref., Tsuruga City, marsh of Nakaikemi, 30.VIII–19.IX.2016 (MsT.), A. Noishiki leg. (OMNH); 2 ♂♂, same locality and collector, 10–31.VII.2016 (MsT.) (OMNH); 1 ♂, same locality and collector, 17.VI–10.VII.2016 (MsT.) (OMNH); 1 ♂, same locality and collector, 14–30.VIII.2016 (MsT.) (OMNH); 1 ♂, same locality and collector, 30.VIII–19.IX.2016 (MsT.) (OMNH); 6 ♀♀, same locality, 28.V–11.VI.2017 (MsT.), Y. Asari & Y. Fujino leg. (OMNH). 1 ♂, same locality, 16.IV.2016, S. Fujie leg. (OMNH); 1 ♀, Fukui Pref., Ooi Town, Natashô-notaai, 17.VII.2021, S. Fujie leg. (OMNH); 1 ♀, Kyôto Pref., Kyôtango City, Ômiya, Uchiyama, 24.VI.2022, H. Ohishi leg. (OMNH); 1 ♀, Miyazaki Pref., Miyazaki City, Yoshino, pond, 20–22.IX.1996, K. Yamagishi leg. (MUNJ).

Genus *Streblocera* Westwood

Streblocera Westwood, 1833. Type. *Streblocera fulviceps* Westwood, 1833.

Eutanycerus Foerster, 1862. Type. *Eutanycerus halidayanus* Foerster, 1862. Syn. by Dalla Torre (1898).

Cosmophorida Hedqvist, 1955. Type. *Cosmophorus flaviceps* Marsall, 1897. Syn. by Capek & Snoflak (1959).

Streblocera subgenus *Asiastreblocera* Belokobylskij, 1987. Type. *Streblocera cornuta* Chao, 1964.

Streblocera subgenus *Villocera* Chen & Achterberg, 1997. Type. *Streblocera villosa* Papp, 1985.

Diagnosis. Maxillary palp with 6 segments; length of scapus 2–12× width; scapus with basal horn or raised longitudinal carina, or without any process; occipital carina complete, separated from hypostomal carina ventrally; occipital carina complete or sometimes narrowly absent dorsally, ventrally joining or remaining separate from hypostomal carina; notauli present; vein M+CU1 of fore



Fig. 24. *Spathicopsis flavocephala* van Achterberg, female, from Fukui Prefecture. — A, Habitus, lateral view; B, wings; C, first metasomal tergite, dorsal view; D, metasoma, lateral view.

wing sclerotized; vein 1-SR+M of fore wing absent; vein r-m of fore wing absent; first metasomal tergite petiolate and widened apically, closed ventrally at basal half; dorsope and laterope usually present, but sometimes absent; ovipositor and ovipositor sheath slender; ovipositor straight or down-curved.

Distribution. Afrotropical, Neotropical, Oriental, and Palearctic regions.

Bionomics. Parasitoids of adult Chrysomelidae (Coleoptera) (Yu *et al.*, 2016).

Japanese species and subgenera. One species, *S. (S.) spasskensis* Belokobylskij, is newly recorded from Japan. Consequently, four subgenera and 11 species are known in Japan.

Subgenus *Asiastreblocera* Belokobylskij, 1987

***Streblocera (Asiastreblocera) dayuensis* Wang**
(Fig. 25A–E)

Streblocera dayuensis Wang, 1983. Type. ♀, from China in SNU.

Streblocera (Asiastreblocera) dayuensis Wang, 1983. Newly placed in the subgenus by Belokobylskij (1987b).

Distribution. China, Japan, Korea, Philippines, Russian Far East, Taiwan.

Distribution within Japan. Honshû: Ibaraki Pref., *Aichi

Pref.; Kyûshû: *Kumamoto Pref. (Belokobylskij, 2000e; present study).

Examined material. 1♀, Russia Primorskiy krai, 50 km from Ussriysk, Nikolo-Lvivske, 19–20.VIII.2003, S. Belokobylskij leg. (ZISP); 1♀, Aichi Pref., Nagakute, Aichi Agr. Res. C., 9–15.X.2008, MsT., K. Yamagishi leg. (MUNJ); 1♀, Kumamoto Pref., Takamori Town, Kusakabe, 32.7940N / 131.2094E, 12.VII.2019 (LT.), Y. Hisasue leg. (OMNH).

Subgenus *Cosmophoridia* Hedqvist, 1955

***Streblocera (Cosmophoridia) flaviceps* (Marshall)**
(Fig. 26A–C)

Cosmophorus flaviceps Marshall, 1898. Type. ♀, from Germany. Collection unknown.

Distribution. China, Japan, Korea, Russian Far East; Western Palearctic region.

Distribution within Japan. Honshû: Iwate Pref., *Tôkyô Pref.; Kyûshû: *Fukuoka Pref., Ôita Pref., *Kumamoto Pref. (Belokobylskij, 2000e; present study).

Examined material. 1♀, Russia, Primorskiy kray, Spassk-Dal'niy, 1.VII.2010, forest, glades, S. Belokobylskij leg. (ZISP); 1♀, Tôkyô Pref., Inagi, Oomarudaira, 23.IV.1967 (NARO); 1♀, Fukuoka Pref., Mt. Hiko-san, 8.VII.1970, K. Nozato leg. (NARO); 1♂, Kumamoto Pref., Izumi, Mt.

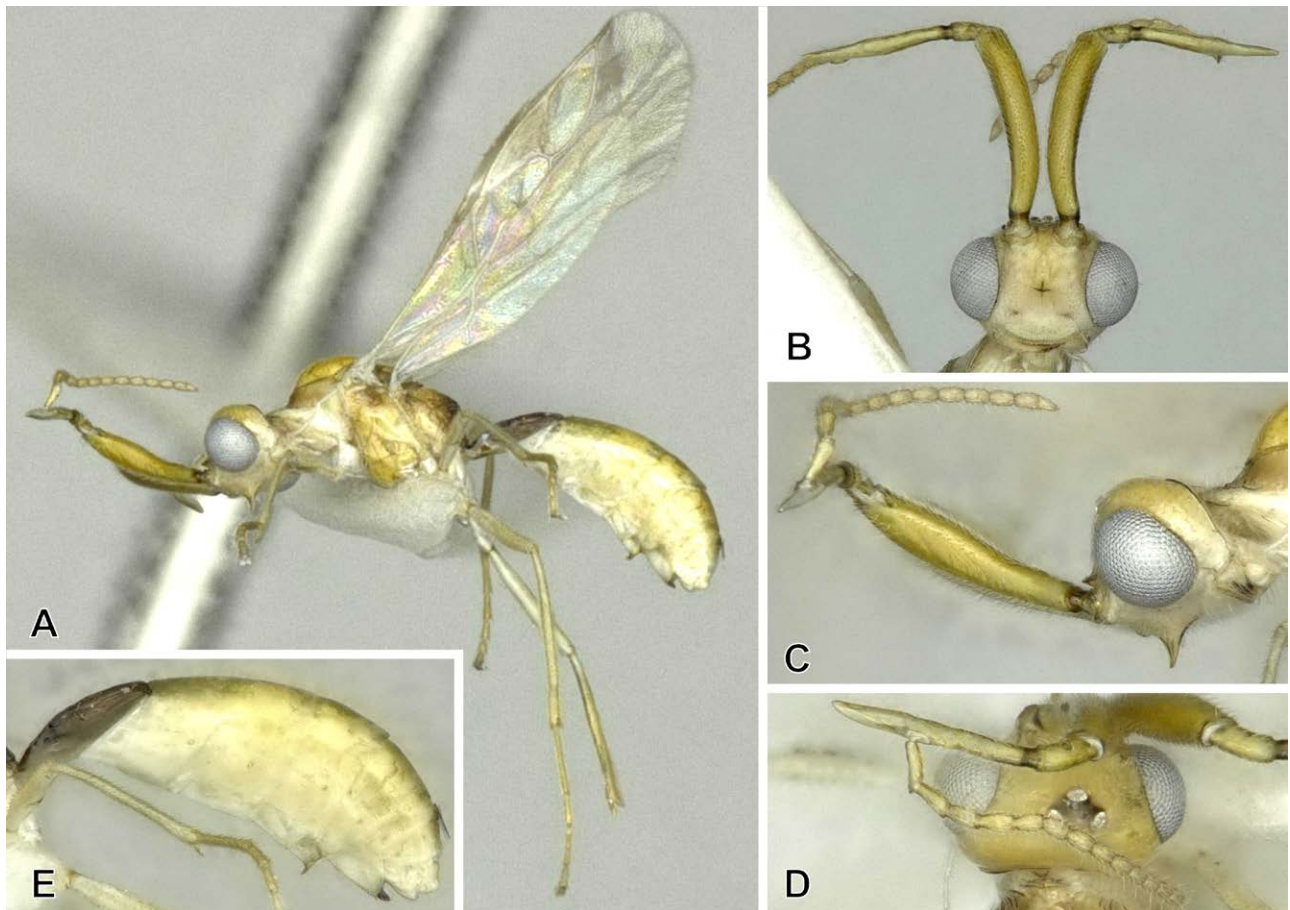


Fig. 25. *Streblocera (Asiastreblocera) dayuensis* Wang, female, from Aichi Prefecture. — A, Habitus, lateral view; B, head and basal antennal segments, frontal view; C, same, lateral view; D, head and antenna, dorsal view; E, metasoma, lateral view.

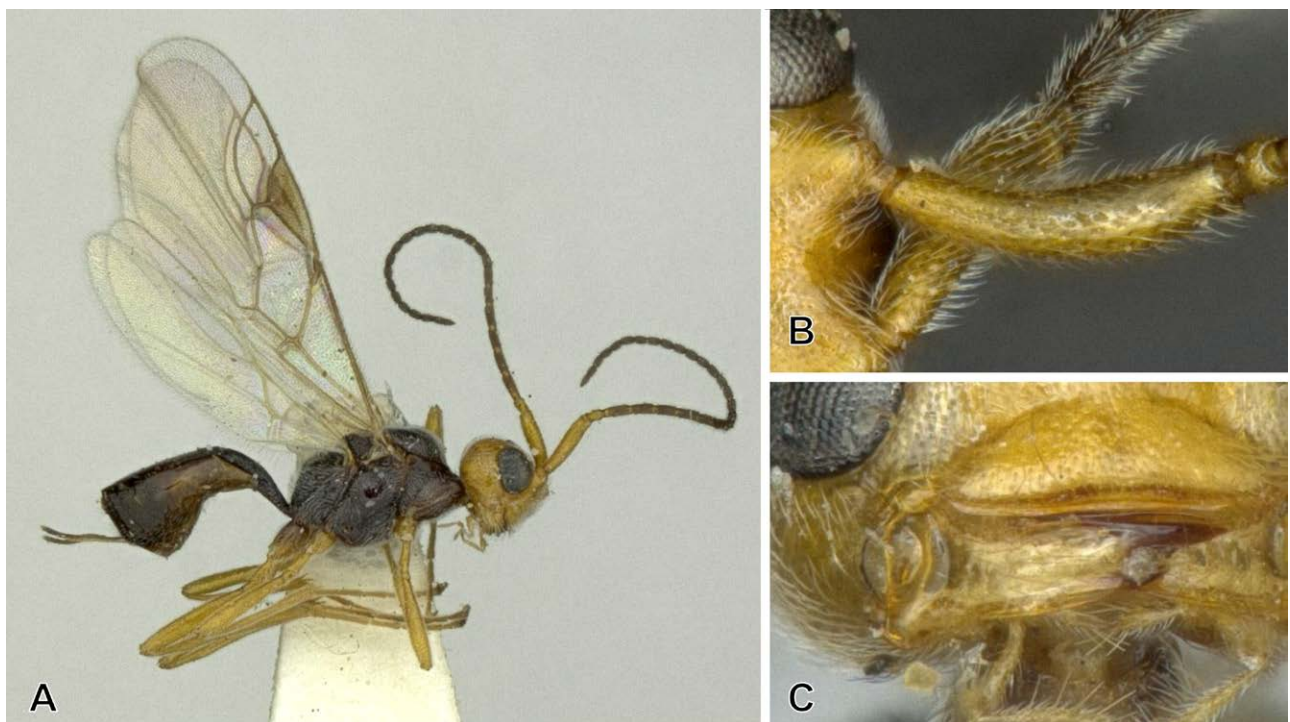


Fig. 26. *Streblocera (Cosmophoridia) flaviceps* (Marshall), female, from Tôkyô Prefecture. — A, Habitus, lateral view; B, scape, ventral view; C, head, ventro-frontal view.

Hakuchô-zan, alt. 1,300 m, 26.V.1978, T. Gotô leg. (NARO); 1♀, same locality and collector, 4–7.VI.1979 (NARO).

Subgenus *Eutanycerus* Foerster, 1863

Streblocera (Eutanycerus) dentiscapa Belokobylskij

Streblocera (Cosmophoridia) dentiscapa Belokobylskij, 1987.
Type. ♀, from Russia in ZISP.

Distribution. Japan, Korea, Russian Far East.

Distribution within Japan. Honshû: *Saitama Pref., *Aichi Pref., *Nara Pref. (present study). Belokobylskij (2000g) recorded this species from Honshû, but no further location was indicated.

Examined material. 1♀, Saitama Pref., Chichibu City, Mitsumine, 35.551N / 138.938E, 22.IV.2022, J. Abe leg. (OMNH); 1♀, Nara Pref., Totsukawa Vil., Mt. Shakaga-take, 31.V.2014, S. Fujie leg. (OMNH).

Remarks. Japanese specimens examined run to *S. dentiscapa* in the key for the Palaearctic region (Belokobylskij, 2000e) and mostly agree with the original description, except for the body length 3.3–3.5 mm.

Streblocera (Eutanycerus) emeiensis Wang

Streblocera emeiensis Wang, 1981. Type. ♀, from China in ASIZ.

Streblocera (Eutanycerus) emeiensis Wang, 1981. Newly placed in the subgenus by Chen & van Achterberg (1997).

Distribution. China, Japan.

Distribution within Japan. Honshû: Tôkyô Pref. (Fujie & Maeto, 2014).

Streblocera (Eutanycerus) galinae Belokobylskij

Streblocera (Cosmophoridia) galinae Belokobylskij, 1987.
Type. ♀, from Russia in ZISP.

Distribution. Japan, Korea, Russian Far East.

Distribution within Japan. Hokkaidô; Honshû: *Iwate Pref., *Nagano Pref., *Aichi Pref., *Fukui Pref., *Hyôgo Pref.; Kyûshû: *Fukuoka Pref., *Kumamoto Pref. (Belokobylskij, 2000g; present study). Belokobylskij (2000g) recorded this species from Hokkaidô, Honshû and Kyûshû, but no further locations were indicated.

Examined material. 1♀ (holotype), Russia, Primorskiy kray, 19.VII.1984, S. Belokobylskij leg. (ZISP); 1♀, Hokkaidô, Horokanai Town, Moshiri, alt. 430 m, 44°22' 03"N / 142°18' 18"E, 21.VI.2014 (LT.), M. Itô leg. (OMNH); 1♀, Hokkaidô, Biei, Chûbetsu, 7.VII.1980, K. Maeto leg. (NARO); 1♀, Hokkaidô, Mt. Soranuma-dake, 25.VII.1982, M. Miyazaki leg. (NARO); 3♀♀1♂, Iwate Pref., Mt. Iwate-san, 2.VIII.1975, O. Yata leg. (NARO); 2♀♀, Nagano Pref., Shimashima-dani, alt. 1,000–1,300 m, 28.VII.1980, H. Takemoto leg. (NARO); 3♀♀, same locality and collection date, K. Maeto leg. (NARO); 2♀♀, Nagano Pref., Shimashima-dani, alt. 1300–1700 m,

27.VII.1980, K. Maeto leg. (NARO); 1♀, Aichi Pref., Asahi, Yawata, Decd. f., alt. 650 m, 19–26.V.1998 (MsT.), M. Ozawa leg. (MUNJ); 5♀♀, Fukui Pref., Oono City, Nukumi, 35°48' 34"N 136°27' 54"E, alt. 610 m, 21.VI.2014 (LT.), S. Fujie leg. (OMNH); 2♀♀1♂, Hyôgo Pref., Haga Town, Akazai-keikoku, 23.VI.1984, K. Konishi leg. (NARO); 2♀♀, Hyôgo Pref., Mt. Hyônosen, alt. 700–1,250 m, 21–22.VIII.1978, K. Maeto leg. (NARO); 1♀, Fukuoka Pref., Mt. Hiko-san, 16.VI.1982, H. Takemoto leg. (NARO); 1♀, same locality, 20.VI.1969, K. Kanmiya leg. (NARO); 1♀, Kumamoto Pref., Izumi, Mt. Hakuchô-zan, alt. 1,300 m, 15.V.1979, K. Maeto leg. (NARO).

Streblocera (Eutanycerus) nigrithoracica Watanabe

Streblocera nigrithoracica Watanabe, 1937. Type. ♀, from Japan in EIHU.

Streblocera (Cosmophoridia) nigrithoracica Watanabe, 1937. Newly placed in the subgenus by Belokobylskij (1987b).

Streblocera (Eutanycerus) nigrithoracica Watanabe, 1937. Transferred by Belokobylskij (2000f).

Distribution. Japan.

Distribution within Japan. Hokkaidô; Honshû: *Fukushima Pref., *Gunma Pref., Hiroshima Pref.; Shikoku: Ehime Pref.; Kyûshû (Watanabe, 1937; Kotani, 1980; Maeto & Nakamura, 1995; Belokobylskij, 2000g; present study). Belokobylskij (2000g) recorded this species from Kyûshû, but no further location was indicated.

Examined material. 1♀ (holotype), Hokkaido, Sapporo, Moiwa, 12.VII.1931, S. Kato leg. (SEHU); 1♀, Hokkaidô, Biei, Chûbetsu, 7. VII.1980, K. Maeto leg. (NARO); 1♀, Fukushima Pref., Oze, Hatomachi, 25. VI. 1964, N. Fukuhara leg. (NARO); 1♀, Gunma Pref., Mt. Akagiyama, 18. VI. 1980, LT., M. Hayashi leg. (NARO); 1♀, Ehime Pref., Mts. Odamiyama, Odamiyama-keikoku, 8. V. 1995, E. Yamamoto leg. (NARO); 1♀, Ehime Pref., Odamiyama, Koyayama, 21. VI. 1993, E. Yamamoto leg. (NARO).

Streblocera (Eutanycerus) okadai Watanabe

Streblocera okadai Watanabe, 1942. Type. ♀, from China in EIHU.

Streblocera (Cosmophoridia) okadai Watanabe, 1942. Newly placed in the subgenus by Belokobylskij (1987b).

Streblocera flava You & Xiong, 1988. Syn. by Chao (1993).

Streblocera orientalis Chao, 1964. Syn. by Chao (1993).

Streblocera shaanxiensis Wang, 1984. Syn. by Chao (1993).

Streblocera zhongmouensis Wang, 1982. Syn. by Chao (1993).

Streblocera (Eutanycerus) okadai Watanabe, 1942. Transferred by Chen & van Achterberg (1997).

Distribution. China, Japan, Korea, Russian Far East, Taiwan; Vietnam.

Distribution within Japan. Hokkaidô; Honshû: Kanagawa Pref., *Yamanashi Pref., *Aichi Pref., *Kyôto Pref., *Ôsaka Pref., Okayama Pref.; Shikoku: Ehime Pref.; Kyûshû: Fukuoka Pref.; *Kouri Is. (Kotani, 1980; Maeto & Nagai, 1985; Nagase, 2004; Nagase & Watanabe, 2018; present study).

Hosts. *Medythia nigrobilineata* (Chrysomelidae) in Japan (Maeto & Nagai, 1985). Another congeneric species is also known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Kanawgawa Pref., Mts. Tanzawa, Doudaira, 5.IX.1993, T. Kinoshita leg. (KPMNH); 2♀♀, Yamanashi Pref., Hokuto City, Hakushûchô-yokote, Mt. Nakayama, alt. ca. 650–720 m, 6.IX.2022, S. Fujie leg. (OMNH); 1♀, Aichi Pref., Kasugai City, Takagi (Grassland), 2.X.2013 (YPT.), Y. Kamiya leg. (MUNJ); 1♀, Kyôto Pref., Yawata City, Kôduya, left bank of Kidu River, 19.V.2019, S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Takatsuki City, Udono, right bank of Yodogawa River, 20.V.2018, S. Fujie leg. (OMNH); 13♀♀3♂♂, Ôsaka Pref., Ôsaka City, Higashiyodogawa Ward, Kunijima, right bank of Yodogawa River, 1.VI.2022, S. Fujie leg. (OMNH); 1♀, same locality and collector, 17.V.2015 (OMNH); 1♀, Kouri Is., Okinawa Pref., Nakijin Vil., 25.XII.2016, S. Fujie leg. (OMNH).

Remarks. The body length of specimens examined is 2.7–3.9 mm.

Subgenus *Streblocera* Westwood, 1833

Streblocera (Streblocera) hikoensis Belokobylskij

Streblocera (Streblocera) hikoensis Belokobylskij, 2000. Type. ♀, from Japan in NARO.

Distribution. Japan.

Distribution within Japan. Kyûshû: Fukuoka Pref. (Belokobylskij, 2000e).

Examined material. 1♀ (holotype), Fukuoka Pref., Mt. Hiko, alt. 700 m, 29.VII–4.VIII.1989, M. Sharkey leg. (NARO).

Streblocera (Streblocera) jezoensis Belokobylskij

Streblocera (Streblocera) jezoensis Belokobylskij, 2000. Type. ♀, from Japan in NARO.

Distribution. Japan.

Distribution within Japan. Hokkaidô (Belokobylskij, 2000e).

Examined material. 1♀ (holotype), Hokkaidô, Sapporo City, Jôzankei, 21–29.VIII.1989, K. Maeto & M. Sharkey leg. (NARO).

Streblocera (Streblocera) laticapa Belokobylskij

Streblocera (Streblocera) laticapa Belokobylskij, 2000. Type. ♀, from Japan in NARO.

Distribution. Japan.

Distribution within Japan. Hokkaidô, Kyûshû: Fukuoka Pref. (Belokobylskij, 2000e).

Examined material. 1♀ (holotype), Hokkaidô, Sapporo City, For. Res. Station, 28.VII.1989, M. Sharkey leg. (NARO).

Streblocera (Streblocera) spasskensis Belokobylskij

(Fig. 27E, F)

Streblocera (Streblocera) spasskensis Belokobylskij, 2000. Type. ♀, from Russia in ZISP.

Distribution. China, Japan, Korea, Russian Far East. New to Japan.

Distribution within Japan. *Hokkaidô; Honshû: *Iwate Pref. (present study).

Examined material. 1♀, Hokkaidô, Sapporo City, Mt. Teine, alt. 400–1000 m, 13.VIII.1977, K. Ohara leg. (NARO); 1♀, Iwate Pref., Nishiwaga Town. Mt. Mahiru-dake, 12.VIII.2015, S. Fujie leg. (OMNH).

Remarks. Japanese specimens examined run to *S. spasskensis* in the key for the Palaearctic region (Belokobylskij, 2000e) and mostly agree with the original description, except for the body length 2.5–2.6 mm, the distance between tentorial pits 0.9× the distance from pits and eye, the length of first antennal segment 2.5–3.3× width (without tooth), 1.0–1.1× height of head.

Genus *Syntretus* Foerster

Syntretus Foerster, 1862. Type. *Microctonus vernalis* Wesmâel, 1835.

Falcosyntretus Tobias, 1965. Type. *Falcosyntretus falcifer* Tobias, 1965.

Exosyntretus Belokobylskij, 1998. Type. *Syntretus nevelskoi* Belokobylskij, 1996.

Diagnosis. Maxillary palp with 5 segments; occipital carina present, usually complete, occasionally reduced dorsally, ventrally joining hypostomal carina; notauli absent; tarsal claws bifurcate; vein M+CU1 of fore wing unsclerotized; vein 1-SR+M of fore wing absent; vein r-m of fore wing absent; first metasomal tergite petiolate, basal half to basal two third ventrally fused; dorsope absent; laterope usually absent, but sometimes present; ovipositor and ovipositor sheath slender; ovipositor straight or slightly down-curved.

Distribution. Afrotropical, Australasian, Nearctic, Neotropical, Oceanic, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of adult Apidae and Ichneumonidae (Hymenoptera) (Yu *et al.*, 2016).

Japanese species and subgenera. Three subgenera and each one species of them are known in Japan. Several unidentified species remain in Japanese materials.

Subgenus *Exosyntretus* Belokobylskij, 1998

Syntretus (Exosyntretus) elabsus (Papp)

(Fig. 28A–E)

Falcosyntretus elabsus Papp, 1992. Type. ♀, from Korea in TMA.

Distribution. Japan, Korea, Russian Far East.

Distribution within Japan. Hokkaidô (Belokobylskij, 2000g).

Examined material. 1♀, Hokkaidô, Sapporo City, Misumai,

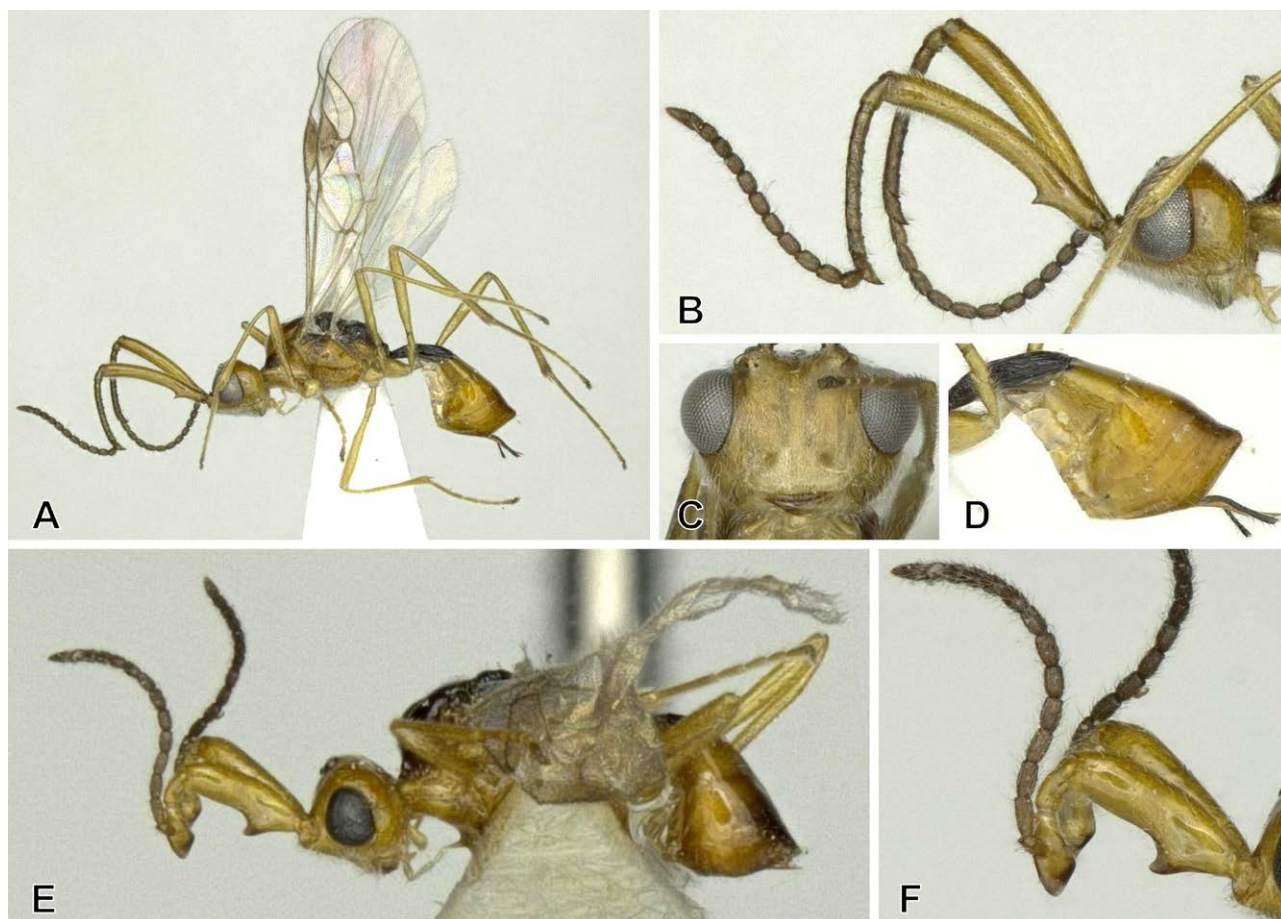


Fig. 27. *Streblocera (Eutanycerus)* sp., female, from Nagano Prefecture; *S. (Streblocera) spasskensis* Belokobylskij, female, from Hokkaidō (E, F) — A, E, Habitus, lateral view; B, head and antenna, lateral view; C, mandible, frontal view; D, metasoma, lateral view; F, antenna, lateral view.

Kannonzawa, 16–27.VII.1992 (MsT.), N. Kuhara leg. (NARO).

Subgenus *Syntretus* Foerster, 1863

Syntretus (Syntretus) falcifer (Tobias)

Falcosyntretus falcifer Tobias, 1965. Type. ♀, from Kyrgystan in ZISP.

Syntretus (Syntretus) falcifer (Tobias, 1965). Transferred by van Achterberg & Haeselbarth (2003).

Distribution. Japan, Russian Far East; Kyrgystan.

Distribution within Japan. Honshū: Nagano Pref. (van Achterberg & Haeselbarth, 2003).

Syntretus (Syntretus) planifacies Belokobylskij

Syntretus planifacies Belokobylskij, 1993. Type. ♀, from Russia in ZISP.

Distribution. Japan, Russian Far East.

Distribution within Japan. Kyūshū: Fukuoka Pref. (van Achterberg & Haeselbarth, 2003)

Genus *Townesilitus* Haeselbarth & Loan

Townesilitus Haeselbarth & Loan, 1983. Type. *Microctonus bicolor* Wesmael, 1835.

Diagnosis. Maxillary palp with 5 segments; occipital carina complete, separated from hypostomal carina ventrally; occipital carina complete, ventrally joining hypostomal carina; notauli present; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing absent; vein r-m of fore wing absent; first metasomal tergite petiolate and widened apically, closed ventrally at basal half; dorsope and laterope absent; ovipositor and ovipositor sheath slender, straight.

Distribution. Nearctic, Oriental, and Palaearctic region.

Bionomics. Parasitoids of adult Chrysomelidae (Coleoptera) and Lasiocampidae (Lepidoptera). The latter needs to be confirmed.

Japanese species. Two species, *Townesilitus aemulus* (Ruthe) and *T. deceptor* (Wesmael), are known in Japan.

Townesilitus aemulus (Ruthe)

Microctonus aemulus Ruthe, 1865. Type. ♀, from Germany in NHM.

Microctonus punctifrontis Watanabe, 1955. Syn. by Belokobylskij (2000g).

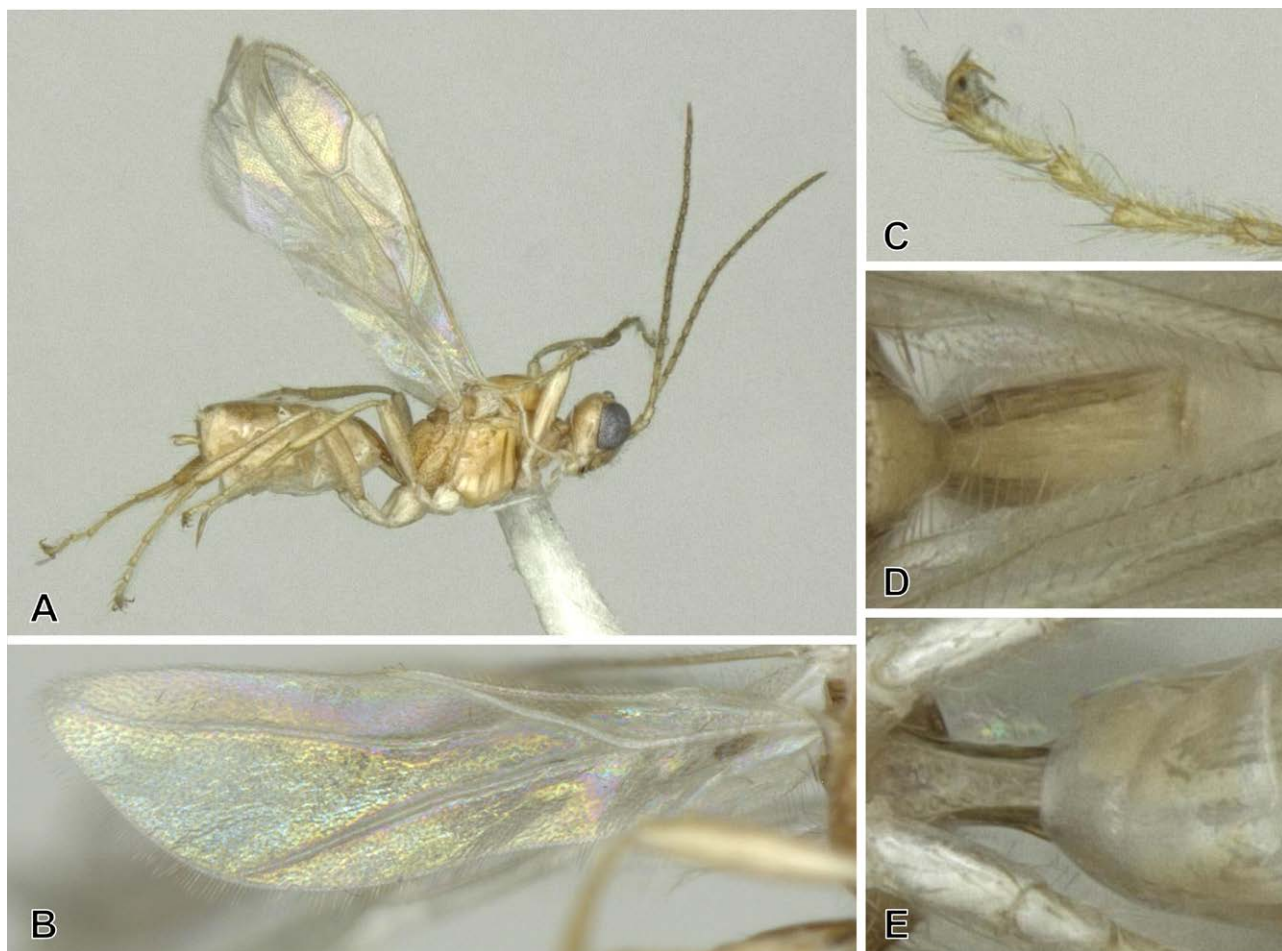


Fig. 28. *Syntretus (Exosyntretus) elabusus* (Papp), female, from Hokkaidô. — A, Habitus, lateral view; B, hind wing; C, hind claw; D, first metasomal tergite, dorsal view; E, same, ventral view.

Distribution. Japan, Russian Far East; Western Palearctic region.

Distribution within Japan. Honshû: Nagano Pref. (Watanabe, 1955).

Hosts. *Psylliodes punctifrons* (Chrysomelidae) in Japan (Watanabe, 1955).

Examined material. 2♀♀1♂, Hokkaidô, Nemuro, Shibetsu, Rubesu, 25–28.VIII.1971, K. Yamagishi leg. (MUNJ); 1♂, Kyôto Pref., Yawata City, Yawatahayashinomoto, 25.V.2021, I. Nie & S. Fujie leg. (OMNH); 1♂, Ôsaka Pref., Takatsuki City, Udono, right bank of Yodogawa River, 20.V.2018, S. Fujie leg. (OMNH).

***Townesilitus deceptor* (Wesmael)**

(Fig. 30A–E)

Microctonus deceptor Wesmael, 1835. Type. ♀, from Belgium in IRSNB.

Distribution. China, Japan, Korea, Russia; Western Palearctic region.

Distribution within Japan. *Hokkaidô; Honshû: *Akita Pref., *Miyagi Pref., *Tochigi Pref., *Niigata Pref., *Ishikawa Pref., *Fukui Pref., *Shizuoka Pref., *Nagano Pref., *Gifu Pref., *Aichi Pref., *Mie Pref., Kyôto Pref., *Nara Pref., *Ôsaka Pref., *Wakayama Pref., *Hyôgo Pref.; Kyûshû: Fukuoka Pref.,

Kumamoto Pref.; Tsushima Is.; Amami-ôshima Is.; *Okinawa-hontô Is. (Haeselbarth, 1988; present study).

Hosts. No host records are available in Japan, while Chrysomelidae (*Altica*, *Melasoma*) are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀, Hokkaidô, Sapporo City, Hitsujigaoka, 43°00'N / 141°24'E, 14–21.VII.2008 (MsT.), K. Konishi leg. (OMNH); 1♀, same locality and collector, 21–28.VII.2008 (MsT.) (OMNH); 1♀, same locality and collector, 4–11.VIII.2008 (MsT.) (OMNH); 8♀♀, same locality and collector, 43°00'27''N / 141°24'53''E, 8–15.VIII.2011 (MsT.) (OMNH); 3♀♀, same locality and collector, 15–22.VIII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 22–29.VIII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 27.VI–4.VII.2011 (MsT.) (OMNH); 4♀♀, same locality and collector, 18–25.VII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 25.VII–1.VIII.2011 (MsT.) (OMNH); 1♀, same locality and collector, 43°00'11''N / 141°24'55''E, 22–29.VIII.2011 (MsT.) (OMNH); 3♀♀, same locality and collector, 43°00'24''N / 141°24'52''E, 13–20.VII.2012 (MsT.) (OMNH); 8♀♀, same locality and collector, 8–15.VIII.2012 (MsT.) (OMNH); 6♀♀, same locality and collector, 15–22.VIII.2012 (MsT.) (OMNH); 5♀♀, same locality and collector, 22–29.VIII.2012 (MsT.) (OMNH); 6♀♀1♂, Akita Pref., Senboku City, Nyûtô Spa, 13.VIII.2015, S. Fujie leg. (OMNH); 1♀,

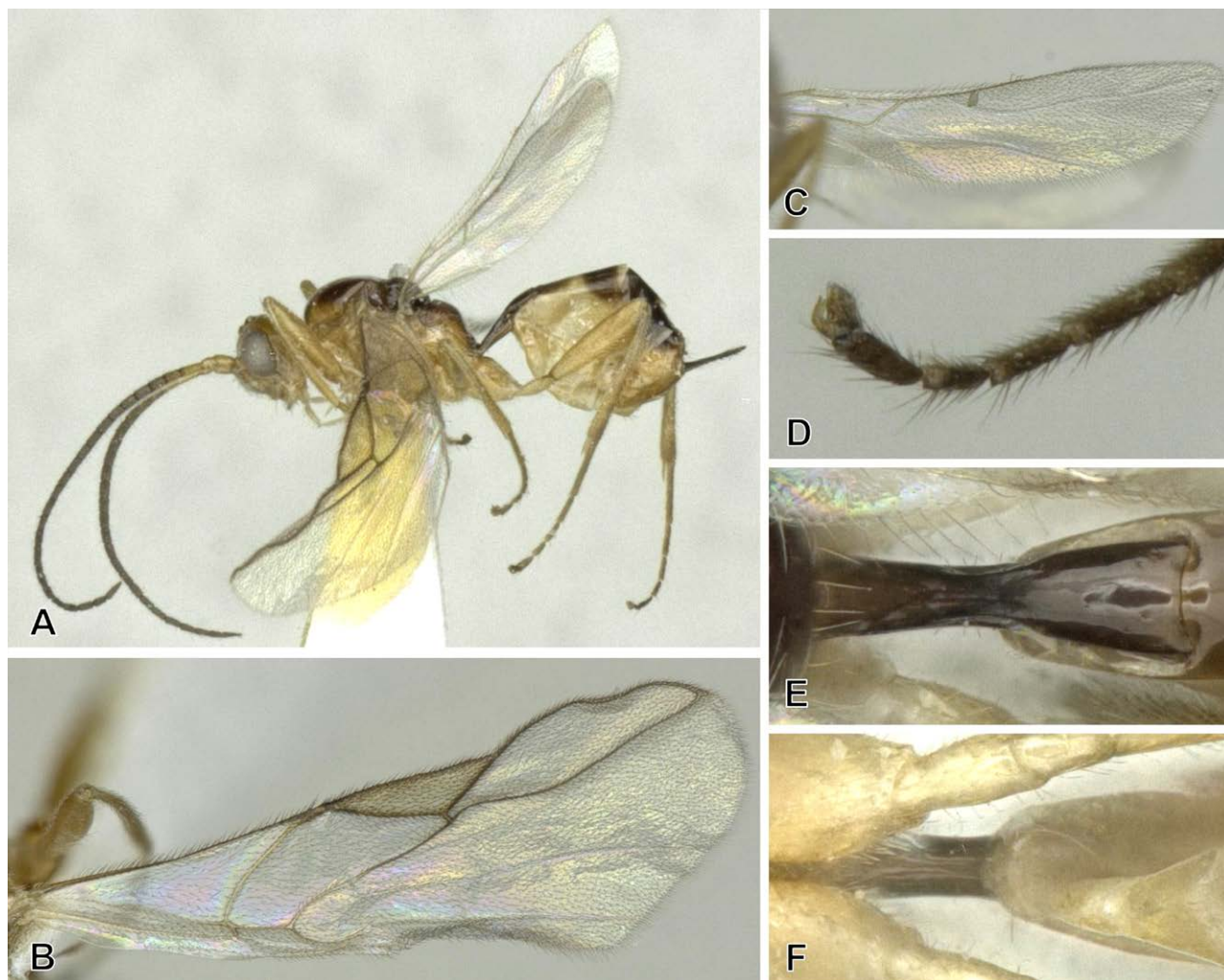


Fig. 29. *Syntretus (Syntretus)* sp., female, from Nagano Prefecture. — A, Habitus, lateral view; B, fore wing; C, hind wing; D, hind claw; E, first metasomal tergite, dorsal view; E, same, ventral view.

Akita Pref., Akita City, Kanaashi, 25.VI.2022, J. Kobayashi leg. (APM); 1♂, Miyagi Pref., Minamisanriku Town, Tokura, 6.VIII–4.IX.2016 (MsT.), T. Suzuki leg. (OMNH); 3♀♀, Tochigi Pref., Nasushiobara City, Hikinuma, 10–23.VI.2020 (MsT.), E. Katayama leg. (OMNH); 2♀♀, same locality and collector, 7–20.VII.2020 (MsT.) (OMNH); 2♀♀, Niigata Pref., Itoigawa City, Renge Spa, 20.VIII.2016 (LT.), M. Itô leg. (OMNH); 1♀, Niigata Pref., Nagaoka City, Suyoshi, Mt. Nokogiri-yama, 37°23'N 138°55' E, alt. 200–760 m, 21.VI.2013, S. Shimizu leg. (OMNH); 1♂, Ishikawa Pref., Nōmi City, Mitsukuchi, paddy field, 13.V–26.V.2011 (MsT.), H. Fukutomi leg. (MUNJ); 1♀, Ishikawa Pref. Kaga City, Mt. Kariyasu-yama, 28.VI–19.VII.2002 (MsT.), K. Esaki leg. (OMNH); 1♀, Ishikawa Pref., Hakusan City, Yawata, 21–27.2009 (MsT.), H. Fukutomi leg. (MUNJ); 2♀♀, Ishikawa Pref., Hakusan City, Togadani, Beech, 21.VI–14.VII.2010 (MsT.), H. Fukutomi leg. (MUNJ); 1♂, Fukui Pref., Tsuruga City, marsh of Nakaikemi, 10–31.VII.2016 (MsT.), A. Noishiki leg. (OMNH); 1♀, Shizuoka Pref., Shizuoka City, Aoi Ward, Umegashima, 3–16.VII.2001 (MsT.), T. Sugiyama leg. (MUNJ); 1♀, same locality and collector, 18.VI–2.VII.2001 (MsT.) (MUNJ); 1♀, same locality and collector, 17.VII–5.VIII.2001 (MsT.) (MUNJ); 1♂, Nagano Pref., Outaki Vil., Mt. Ontake-

san, Tanohara, 8.VIII.2007, K. Watanabe leg. (KPMNH); 1♂, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 35.520N / 137.3128 E, alt. 1720–1820 m, 5–9.VIII.2010, K. Watanabe leg. (OMNH); 1♂, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 31.VII–2.VIII.2012 (MsT.), M. Itô & S. Fujie leg. (OMNH); 1♀, Gifu Pref., Kani City, Katabira, 19–25.VI.2004 (MsT.), K. Yamagishi leg. (MUNJ); 3♀♀, same locality, 26.VI–2.VII.2004 (MsT.), K. Itô leg. (MUNJ); 1♀, Gifu Pref., Shirakawa Vil., Magari, alt. 700 m, 24.VII–3.VIII.2010 (MsT.), R. Sugiura leg. (MUNJ); 1♀, Aichi Pref., Asahi City, Yawata, alt. 650 m, Decd. f., 18–28.VII.1998 (MsT.), M. Ozawa leg. (MUNJ); 1♀, same locality, 29.VII–11.VIII.1998 (MsT.), A. Hanai & K. Yamagishi leg. (MUNJ); 1♀, Aichi Pref., Asahi City, Yawata Shrine, alt. 400 m, 18–28.VII.1998 (MsT.), M. Ozawa leg. (MUNJ); 1♀, Aichi Pref., Seto City, Jōkōji, Secon. f. 29.VI.2000 (MsT.), C. Mizuno & M. Suzuki leg. (MUNJ); 1♀, Aichi Pref., Nagakute City, Matsukomi, 5–10.VII.2004 (MsT.), S. Kato leg. (MUNJ); 1♀, Mie Pref., Taiki Town, Nishiki, 11–16.VI.2007 (MsT.), M. Nakaseko leg. (MUNJ); 1♀, Kyōto Pref., Yawata City, Yawata-takabou, 25.V.2021, I. Nie & S. Fujie leg. (OMNH); 1♀, Nara Pref., Totsukawa Vil., Mt. Shakaga-take, 20.VII–11.VIII.2013 (MsT.), S. Fujie & T. Hirooka leg. (OMNH); 1♀, same locality

and collector, 14.VI–26.VII.2014 (MsT.) (OMNH); 1♀, same locality and collector, 26.VII–24.VIII.2014 (MsT.) (OMNH); 1♀, Ōsaka Pref., Takatsuki City, Niryou, 13–30.VI.2013 (MsT.), S. Fujie leg. (OMNH); 1♀, Ōsaka Pref., Takatsuki City, Akutagawa-ryokuchi, 25.VI–9.VII.2017 (MsT.), S. Fujie leg. (OMNH); 2♀♀, Ōsaka Pref., Kawachinagano City, Suehirochō, 29.VI.2017, S. Fujie leg. (OMNH); 1♀, Ōsaka Pref., Kawachinagano City, Shimizu, 34.413 / 135.580E, 26.IV.2015, S. Fujie leg. (OMNH); 1♀, Ōsaka Pref., Kawachinagano City, Takihata, 34.3851N / 135.5292E, 17.V.2015 (LT.), S. Fujie leg. (OMNH); 1♂, Wakayama Pref., Susami Town, Mirodu, 9.VI.2016 (LT.), S. Fujie leg. (OMNH); 1♀1♂, Hyōgo Pref., Kami Town, Ojira Ward, Niiya, alt. 710 m, 14.VII–23.VIII.2013 (MsT.), S. Fujie & M. Itō leg. (OMNH); 1♂, Fukuoka Pref., Fukuoka City, Nishi Ward, Kuwabara, Kyūshū Univ., 33.597E / 130.214N, 15.IV.2021, Y. Hisasue leg. (ELKU); 1♂, Fukuoka Pref., Hisayama Town, Ino, collected from blooms of *Acer palmatum*, 10.IV.2018, Y. Hisasue leg. (ELKU); 2♂♂, Fukuoka Pref., Ōnojō City, Ushikubi, 33.479N / 130.483E, 24.VI.2018, Y.

Hisasue leg. (ELKU); 1♂, same locality and collector, 33.484N / 130.483E, 20.IV.2019 (ELKU); 2♀♀2♂♂, Amami-ōshima Is., Kagoshima Pref., Yamato Vil., Ooganeke, 25.V–15.VI.2019 (MsT.), A. Yoshikawa & F. Fujita leg. (OMNH); 1♂, Okinawa-hontō Is., Okinawa Pref., Kunigami Vil., Benoki, 1.V.2019 (LT.), S. Shimizu leg. (OMNH).

Genus *Wesmaelia* Foerster

Wesmaelia Foerster, 1862. Type. *Wesmaelia pendula* Foerster, 1862.

Diagnosis. Maxillary palp with 6 segments; apical antennal segment with an apical spine; occipital carina complete, ventrally joining hypostomal carina; notauli present; vein M+CU1 of fore wing unsclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing absent; first metasomal tergite tubular, extremely elongate, subparallel-sided, and fused ventrally; laterope and dorsope absent; ovipositor and

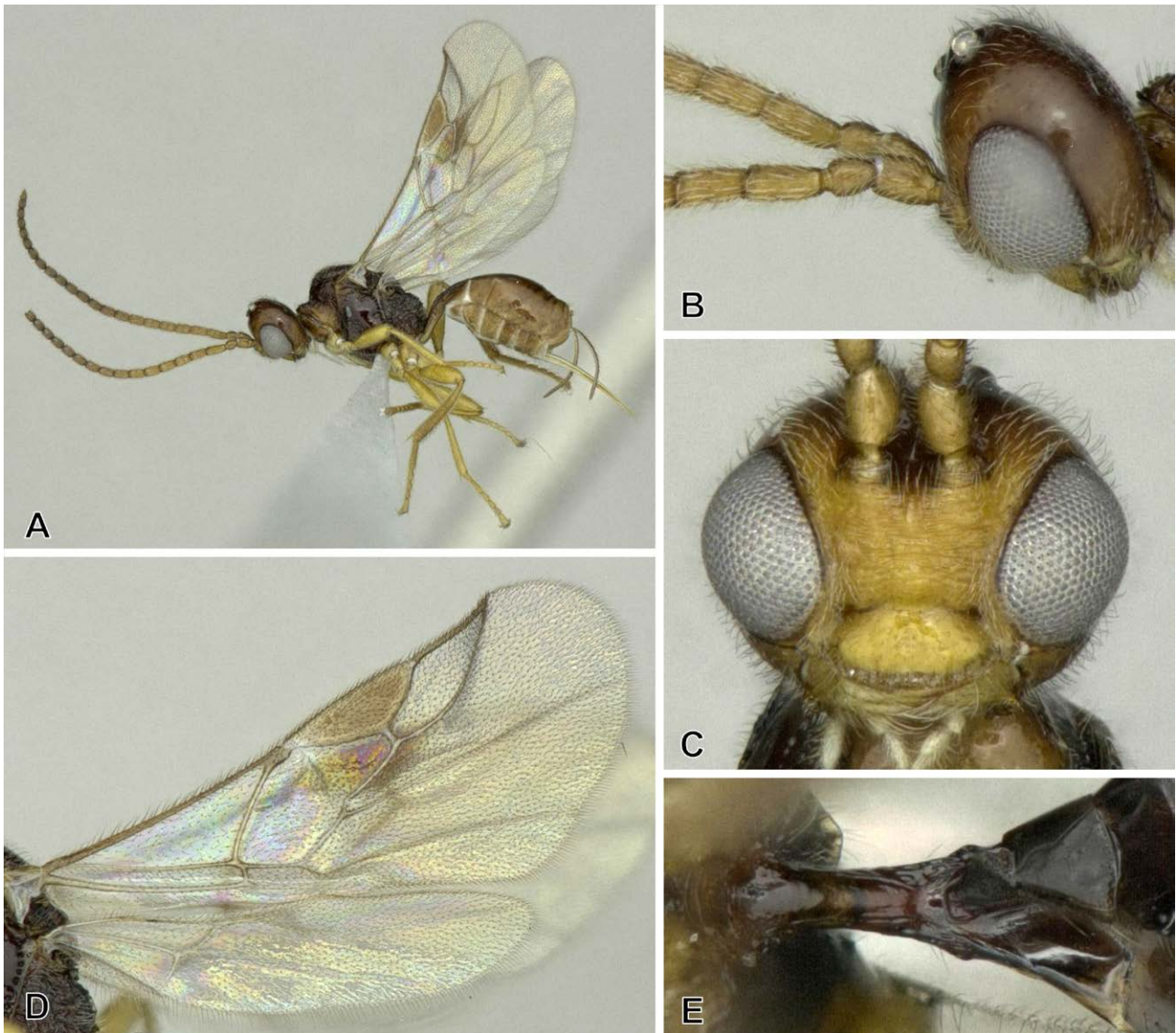


Fig. 30. *Townesilitus deceptor* (Wesmael), female, from Aichi Prefecture. — A, Habitus, lateral view; B, head, lateral view; C, head, frontal; D, wings; E, First metasomal tergite, ventral view.

ovipositor sheath slender, straight.

Distribution. Nearctic, Neotropical, Oceanic, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of nymphs and adults of Nabidae (Hemiptera) (Yu *et al.*, 2016).

Japanese species. An Eastern Palaearctic species, *W. lepos* Belokobylskij, is recorded from Japan for the first time.

***Wesmaelia lepos* Belokobylskij**
(Fig. 31A–E)

Wesmaelia lepos Belokobylskij, 1992. Type. ♀, from Russia in ZISP.

Distribution. Japan, Korea, Russian Far East, Taiwan. New to Japan.

Distribution within Japan. Honshū: *Gifu Pref. (present study).

Examined material. 1♀, Gifu Pref., Shirakawa Vil., Magari, alt. 700m, 24–31.VIII.2010 (MsT.), R. Sugiura leg.

(MUNJ).

Remarks. Japanese specimen agrees well with the original description (Belokobylskij, 1992a) and the redescription by Papp & Chou (1995).

Genus *ZeZe* Curtis

ZeZe Curtis 1832. Type. *ZeZe testaceator* Curtis, 1832.

Zemiotes Foerster, 1862. Type. *Perilitus albiditarsus* Nees, 1834.

Protelus Foerster, 1862. Type. *Perilitus chrysophthalmus* Nees, 1811.

Meteorus auct. (p. p.).

Diagnosis. Maxillary palp with 6 segments; apical antennal segment without an apical spine; occipital carina complete, ventrally joining hypostomal carina; notauli distinctly present; vein M+CU1 of fore wing sclerotized; vein 1-SR+M of fore wing present; vein r-m of fore wing present; first metasomal tergite petiolate and not fused ventrally;

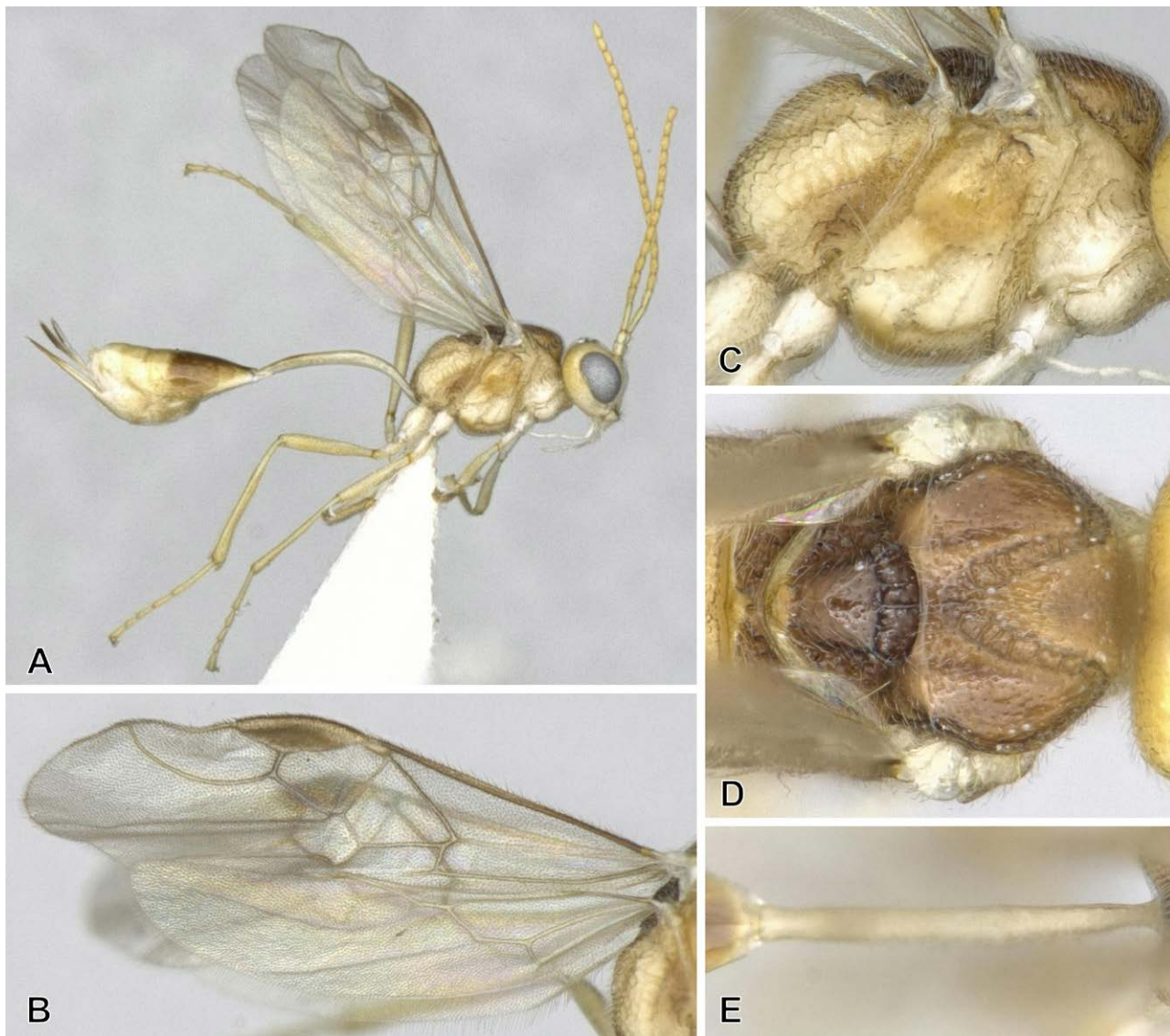


Fig. 31. *Wesmaelia lepos* Belokobylskij, female, from Gifu Prefecture. — A, Habitus, lateral view; B, wings; C, mesosoma, lateral; D, mesonotum, dorsal view; E, first metasomal tergite, dorsal view.

Fourth and fifth metasomal tergites of both sexes largely densely setose; laterope and dorsope present; ovipositor and ovipositor sheath slender, straight.

Distribution. Afrotropical, Nearctic, Neotropical, Oceanic, Oriental, and Palaearctic regions.

Bionomics. Parasitoids of larval Lepidoptera (Yu *et al.*, 2016).

Japanese species. Maeto (1986a) recorded or described seven species of the genus from Japan.

Zelex admirabilis Maeto

Zelex admirabilis Maeto, 1986. Type. ♀, from Japan in ELKU.

Distribution. Japan, Russian Far East, Taiwan.

Distribution within Japan. Hokkaidô; Honshû: Tochigi Pref., *Hyôgo Pref., *Hiroshima Pref.; Kyûshû: Kumamoto Pref. (Maeto, 1986a; Katayama & Fujie, 2017; present study).

Examined material. 1♂, Hokkaidô, Kushiro City, Akan Town, Akan-lake Trail, alt. 420–530 m, 10.IX.2014, S. Shimizu & Y. Saito leg. (OMNH); 1♂, Hokkaidô, Kamishihoro Town, Mitsumata, 2.VIII.2013, R. Matsumoto leg. (OMNH); 2♀♀, Hyôgo Pref., Inagawa Town, Mt. Ôya-san, 16.VII.1999, R. Matsumoto leg. (OMNH); 2♂♂, Hiroshima Pref., Shôbara City, Saijô Town, Tachieboshi Parking Lot, Mts. Hiba, alt. 1180 m, 22–23.VII.2019 (LT.), S. Shimizu leg. (OMNH).

Zelex albiditarsus Curtis

(Fig. 32A, B)

Zelex albiditarsus Curtis, 1832. Type. ♂, from Great Britain in NMV.

Zelex testaceator Curtis, 1832. Syn. by van Achterberg (1979).

Meteorus albitarsis Haliday, 1835. Syn. by Curtis (1837).

Perilitus dispar Wesmâel, 1835. Syn. by Curtis (1837).

Distribution. China, Japan, Korea, Russian Far East; Nearctic, Oriental, and Palaearctic regions.

Distribution within Japan. Hokkaidô; Honshû: *Aomori Pref., Iwate Pref., *Akita Pref., *Yamagata Pref., *Fukushima Pref., Tochigi Pref., Niigata Pref., Tôkyô Pref., Kanagawa Pref., *Nagano Pref., *Gifu Pref., Fukui Pref., *Shiga Pref., *Mie Pref., Nara Pref., *Ôsaka Pref., Hyôgo Pref., Tottori Pref., *Okayama Pref., Hiroshima Pref.; Shikoku: *Kagawa Pref., Ehime Pref.; Kyûshû: Miyazaki Pref.; *Tsushima Is. (Watanabe, 1937; Kotani, 1980; Maeto, 1986a; Maeto & Nakamura, 1995; Konishi & Maeto, 2000; Kubo, 2000; Nagase, 2004; Watanabe *et al.*, 2012; Fujie & Maeto, 2014; Fujie & Shimizu, 2015; Katayama & Fujie, 2017; Nagase & Watanabe, 2018; Maeto & Shimizu, 2019; present study).

Hosts. No host records are available in Japan, while Diprionidae, Geometridae, Lasiocampidae, Noctuidae, Nymphalidae, Pyralidae, Saturniidae, and Tortricidae are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♂, Hokkaidô, Yûbari City, Oyubari, natural forest, alt. 180 m, 19.VII–3.VIII.2007 (MsT.), A. Ueda leg. (OMNH); 1♀, Hokkaidô, Oketo Town, Oketo-

rindô, 43.5883N / 143.2042E, 4.VIII.1997, R. Matsumoto leg. (OMNH); 1♂, Hokkaidô, Tomakomai City, Tomakomai Experimental Forest, 3.VIII.2004, Y. Sawada leg. (OMNH); 1♀, Aomori Pref., Mutsu City, Ohata-machi, 5.VIII.2012 (LT.), S. Fujie leg. (OMNH); 1♀, Iwate Pref., Amiharionsen, 20.VIII.1979, Y. Nasu leg. (OMNH); 1♀, Akita Pref., Senboku City, Nyûtô Spa, alt. 680 m, 13.VIII.2015 (LT.), S. Fujie leg. (OMNH); 2♀♀, Yamagata Pref., Kawanishi Town, alt. ca. 370 m, 30.V.2015 (LT.), S. Shimizu leg. (OMNH); 1♀, Fukushima Pref., Tajima Town, Tônyû, 3–7.VIII.2003, A. Shimizu leg. (KPMNH); 1♂, Tochigi Pref., Nikkô City, Meotobuchi to Hacchohnoy, 7.VI.2010, E. Katayama leg. (personal collection); 2♂♂, Tochigi Pref., Ohtawara City, Kurobane-johshi, 5.V.2010, E. Katayama leg. (personal collection); 1♀, Niigata Pref., Myôkô City, Suginosawa, Mt. Sasagamine, alt. ca. 1,300 m, 20.IX.2013, S. Shimizu leg. (OMNH); 1♀, Nagano Pref., Ueda City, Sugadaira-kôgen, Tsukuba Univ., alt. ca. 1,320 m, 4.VI.2015, S. Shimizu leg. (OMNH); 1♂, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 31.VII.2012, M. Itô leg. (OMNH); 1♀, Gifu Pref., Miya, Oku, 26.V.2001, Y. Takai leg. (OMNH); 1♀, Gifu Pref., Hikagedaira, 21.VII.1980, T. Tanabe leg. (OMNH); 1♂, same locality, 23.IX.1980, E. Nishida leg. (OMNH); 1♀, same locality and collector, 24.IX.1980 (OMNH); 4♀♀1♂, Gifu Pref., Gifu City, Mt. Dodogamine, 5.V.2003, (OMNH); 1♂, same locality, 28.IV.2003 (OMNH); 1♂, same locality, 6.V.2003 (OMNH); 1♀, same locality, 14.V.2002 (OMNH); 2♂♂, Fukui Pref., Ikeda Town, Mizuumi, Mt. Heko-san, alt. 1400–1460 m, 10.VI.2016, S. Shimizu leg. (OMNH); 1♀2♂♂, same locality and collector, 18.VI.2016, (OMNH); 2♂♂, Shiga Pref., Shiga Town, Kitahira, alt. 800 m, 11.VI.2000, H. Yoshida leg. (OMNH); 1♀, Mie Pref., Inabe City, Taian Town, Ugakei, 23.V.2013, A. Kawazoe leg. (OMNH); 1♀, Mie Pref., Tsu City, Misugi Town, Yachi, Mt. Oobora, 21.V.2011, Y. Shinogi leg. (OMNH); 1♀, Mie Pref., Ise City, Ise Shrine, Ôsaka, 5.V.2003, A. Kawazoe leg. (OMNH); 1♀, Mie Pref., Ise City, Ise Shrine, Tobiishi, 17.V.2013, A. Kawazoe leg. (OMNH); 1♀, Kyôto Pref., Yawata City, Yawata-takabou, 22.IV.2021, S. Fujie leg. (OMNH); 1♂, Nara Pref., Yamatokoriyama City, Yatashizenkoen Park, alt. 250 m, 17.V.2010, M. Itô leg. (OMNH); 1♀, Ôsaka Pref., Nose Town, Koyama, 29.IV.2013, S. Fujie leg. (OMNH); 1♂, Ôsaka Pref., Takatsuki City, Niryou, 9.V.2013, S. Fujie leg. (OMNH); 1♂, Ôsaka Pref., Takatsuki City, Hagitani, IV. 2012, S. Fujie leg. (OMNH); 2♀♀1♂, Ôsaka Pref., Takatsuki City, Settsukyô, 9.V.2013 (LT.), S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Kawachinagano City, Shimizu, 34.413N / 135.580E, 26.IV.2015, S. Fujie leg. (OMNH); 1♀, Ôsaka Pref., Kawachinagano City, Takihata, 20.V.2015 (LT.), S. Fujie leg. (OMNH); 1♀, Wakayama Pref., Koya Town, Koya-san, 8.V.2016, H. Kodama leg. (OMNH); 27♂♂, Hyôgo Pref., Kawanishi City, Hitokura Park, 17.V.2013, S. Fujie leg. (OMNH); 14♂♂, same locality and collection date, M. Itô leg. (OMNH); 9♂♂, Hyôgo Pref., Kawanishi City, Kurokawa, alt. 250 m, 15.V.1993, N. Sugiura leg. (MNH); 1♀, Hyôgo Pref., Kôbe City, Kita Ward, Yamadachô-aina, alt. 250 m, 28.IV.2001, H. Yoshida leg. (OMNH); 2♀♀, Hyôgo Pref., Kôbe City, Nada Ward, Kôbe Univ., alt. 110 m, 34°43'27"N / 135°13'58"E, 30.IV.2015, M. Itô leg. (OMNH); 1♀, same



Fig. 32. *Zele albiditarsus* Curtis, female, from Gifu Prefecture. — A, Hind wing; B, metasoma, dorsal view.

locality and collector, 29.IV.2015 (OMNH); 1♂, Hyôgo Pref., Shisou City, Haga Town, Akazai-keikoku, alt. 700 m, 26.V.1992, M. Matsumoto leg. (MNHAH); 1♀, Hyôgo Pref., Yabu City, Mt. Hyônosen, Oodanganaru, 14–15.VII.2013 (LT.), S. Fujie leg. (OMNH); 1♀, same locality, 12.VII.2014, K. Sakagami leg. (OMNH); 3♀♀2♂♂, Okayama Pref., Asakuchi City, Yorishima-cho, 4.V.2014, S. Fujie leg. (OMNH); 4♂♂, Hiroshima Pref., Shôbara City, Saijô Town, Tachieboshi Parking Lot, Mts. Hiba, alt. 1,180 m, 22–23.VII.2019 (LT.), S. Shimizu leg. (OMNH); 1♂, Kagawa Pref., Mannou Town, Mt. Daisen-zan, 21.V.2022, H. Fujimoto leg. (OMNH); 1♂, Ehime Pref., Saijô City, Mt. Ibuki-yama, 14.VI.2002, R. Matsumoto leg. (OMNH); 1♀, Tsushima Is., Nagasaki Pref., Tsushima City, Kamitsushima-machi, Izumi, Shitazaki, alt. ca. 10 m, 8.V.2015, T. Kurihara leg. (OMNH).

Zele caligatus (Haliday)

Meteorus caligatus Haliday, 1835. Type. ♀, from Ireland in NMI.

Meteorus sibiricus Fahringer, 1930. Syn. by van Achterberg (1979).

Distribution. China, Japan, Russian Far East; Nearctic and Western Palaearctic regions.

Distribution within Japan. Honshû: Nagano Pref.; Yakushima Is. (van Achterberg, 1979; Maeto, 1986a).

Hosts. No host records are available in Japan, while Geometridae (*Eupithecia*) and Nymphalidae (*Eurodryas*, *Melitaea*) are known as its hosts (Yu *et al.*, 2016).

Zele chlorophthalmus (Spinola)

Bracon chlorophthalmus Spinola, 1808. Type. ♀, from Netherlands in NNM.

Distribution. China, Japan, Korea, Russian Far East;

Madagascar, Oceanic, Oriental, and Palaearctic regions.

Distribution within Japan. Hokkaidô; Kyûshû: Miyazaki Pref. (Maeto, 1986a).

Hosts. No host records are available in Japan, while Arctiidae, Cephidae, Depressaridae, Geometridae, Lasiocampidae, Lymantriidae, Noctuidae, Pyralidae, Tortricidae, Zygaenidae are known as its hosts (Yu *et al.*, 2016).

Zele deceptor (Wesmael)

Perilitus deceptor Wesmael, 1835. Type ♀, from Belgium in IRSNB.

Meteorus romani Fahringer, 1930. Syn. by van Achterberg (1984).

Meteorus rufulus Thomson, 1895. Syn. by van Achterberg (1984).

Zele albiditarsus: van Achterberg (1979) (misidentified).

Distribution. China, Japan, Korea, Russian Far East, Taiwan; Nearctic and Western Palaearctic regions.

Distribution within Japan. Hokkaidô; Honshû: Iwate Pref., *Yamagata Pref., Niigata Pref., *Saitama Pref., *Tôkyô Pref., Kanagawa Pref., *Yamanashi Pref., Nagano Pref., *Fukui Pref., *Aichi Pref., *Nara Pref., *Wakayama Pref., *Ôsaka Pref., Hyôgo Pref., Hiroshima Pref.; Shikoku: *Tokushima Pref., Ehime Pref.; Kyûshû: Fukuoka Pref. Nagasaki Pref., Ôita Pref., Kumamoto Pref., Kagoshima Pref.; Yakushima Is. (Maeto, 1986a; Hara & Higashiura, 1995; Maeto & Nakamura, 1995; Nagase, 2008; Fujie & Shimizu, 2015; Nagase & Watanabe, 2018; present study).

Hosts. *Zethenia rufescentraria* (Geometridae) in Japan (Hara & Higashiura, 1995). Ethmiidae, Geometridae, Noctuidae, Pyralidae, and Saturniidae are known as its hosts (Yu *et al.*, 2016).

Examined material. 2♀♀, Hokkaidô, Kushiro City, Akan Town, Akan-lake Trail, alt. 420–530 m, 10.IX.2014, S. Shimizu & Y. Saito leg. (OMNH); 1♀, Hokkaidô, Kamikawa Town,

Sounkyo, Ginsendai, alt. 850–1,000 m, 8–9.IX.2014, S. Shimizu leg. (OMNH); 1♀, Hokkaidō, Sapporo City, Hitsujigaoka, 8–15.VIII.2012 (MsT.), K. Konishi leg. (OMNH); 1♀, same locality and collector, 18–25.VII.2011 (MsT.) (OMNH); 1♀, Hokkaidō, Chitose City, Bifue, Kusabue-rindō, 17.VIII–1.IX.2012 (MsT.), N. Kuhara leg. (OMNH); 1♀, Hokkaidō, Rankoshi Town, Yunosato, Naganuma, 10.VIII.2012, S. Fujie leg. (OMNH); 2♀♀, Yamagata Pref., Mamurogawa Town, 14.VII.2012 (MsT.), Y. Matsubara & K. Fukuda leg. (OMNH); 1♂, Saitama Pref., Chichibu City, Otaki, Irikawa Path, alt. 1240 m, 2.X.2010 (LT.), N. Kikuchi leg. (OMNH); 1♀, Tōkyō Pref., Hinohara Vil., Kazuma, Mt. Mitou, 22–23.VII.2012, N. Kikuchi leg. (OMNH); 1♀, Yamanashi Pref., Narusawa Vil., Fuji-rindō, 5.IX.2015, K. Watanabe leg. (KPMNH); 2♀♀, Nagano Pref., Outaki Vil., Mt. Ontake-san, Hakkaisan, 31.VII.2012, M. Itō leg. (OMNH); 1♀, same locality, 35.51N / 137.31E, alt. 1,670–2,090 m, 28.VII.2013, K. Watanabe leg. (OMNH); 1♀1♂, Fukui Pref., Ikeda Town, Mizuumi, Mt. Heko-san, alt. 1,400–1,460 m, 10.VI.2016, S. Shimizu leg. (OMNH); 1♀, same locality and collector, 18.VI.2016 (OMNH); 1♀, Aichi Pref., Toyota City, Kawashimo-cho, 8.IV.2007, T. Mano leg. (OMNH); 1♀, Nara Pref., Kamikitayama Vil., Kotochi, alt. 850 m, 16–17.VII.2017 (LT.), S. Fujie leg. (OMNH); 1♀, Ōsaka Pref., Kawachinagano City, Eboshigata Park, 24.IV.2016, S. Fujie leg. (OMNH); 2♀♀1♂, Ōsaka Pref., Kawachinagano City, Shimizu, 34.413N / 135.580E, 26.IV.2015, S. Fujie leg. (OMNH); 1♀, Wakayama Pref., Mt. Ōtō-san, 3.VII.1980, E. Nishida leg. (OMNH); 1♀, Hyōgo Pref., Kōbe City, Nada Ward, Kōbe Univ., alt. 110 m, 29.IV.2015, M. Itō leg. (OMNH); 6♀♀, same locality and collector, 30.IV.2015 (OMNH); 1♀, Hyōgo Pref., Kōbe City, Nada Ward, Gokishirotenbo Park, 25.IV.2015, S. Fujie leg. (OMNH); 1♀, Tokushima Pref., Miyoshi City, Higashiyasugeoi, Mt. Tsurugi-san, alt. 1,440 m, 33.870163N / 134.080078E, 2–3.VIII.2019 (LT.), S. Shimizu & J. Okayasu leg. (OMNH); 1♀, Ehime Pref., Omogo Valley, Tsuchigoya, 12.VII.1998, R. Matsumoto leg. (OMNH).

Zelee niveitarsis (Cresson)

Perilitus niveitarsis Cresson, 1872. Type. ♀, from USA in ANSP.

Meteorus peronatus Shestakov, 1940. Syn. by van Achterberg (1979).

Distribution. China, Japan, Korea, Russian Far East, Taiwan; Nearctic and Oriental regions.

Distribution within Japan. Hokkaidō; Honshū: Aomori Pref., Iwate Pref., Niigata Pref., *Tōkyō Pref., Nagano Pref., *Gifu Pref., *Kyōto Pref., *Wakayama Pref., *Hyōgo Pref., *Tottori Pref., *Hiroshima Pref.; Sadogashima Is.; Kyūshū: Fukuoka Pref., Kagoshima Pref.; Tsushima Is. (Maeto, 1986a; Fujie & Shimizu, 2015; present study).

Hosts. No host records are available in Japan, while Geometridae and Pyralidae are known as its hosts (Yu *et al.*, 2016).

Examined material. 1♀1♂, Tōkyō Pref., Hinohara Vil., Kazuma, Mt. Mitou, 22–23.VII.2012, N. Kikuchi leg. (OMNH); 1♀, Gifu Pref., Gifu City, Nagara, Mt. Dodogamine,

24.VII.2004, M. Tanaka leg. (OMNH); 1♀, Kyōto Pref., Miyadu City, Kamiseya, 18–19.VII.2015 (LT.), S. Fujie leg. (OMNH); 1♀, Wakayama Pref., Kōya Town, Kōya-san, 8.V.2016, H. Kodama leg. (OMNH); 1♀, Wakayama Pref., Susami Town, Mirodu, 9.VI.2016 (LT.), S. Fujie leg. (OMNH); 1♀, Hyōgo Pref., Kami Town, Mikata-kōgen, 35.3996N / 134.5209E, 11.VII.2015 (LT.), S. Fujie leg. (OMNH); 1♀, Tottori Pref., Yazu Town, Himeji, Mt. Ouginosen, 15–16.VIII.2020 (LT.), S. Fujie leg. (OMNH); 3♀♀, Hiroshima Pref., Shōbara City, Saijō Town, Tachieboshi Parking Lot, Mts. Hiba, 30–31.VII.2019 (LT.), S. Shimizu leg. (OMNH); 2♀♀3♂♂, same locality and collector, 22–23.VII.2019 (LT.) (OMNH); 1♀, Fukuoka Pref., Fukuoka City, Nokonoshima, 21.XI.1998, R. Matsumoto leg. (OMNH).

Zelee ruricola Maeto

Zelee ruricola Maeto, 1986. Type. ♀, from Japan in ELKU.

Distribution. China, Japan, Korea, Russian Far East.

Distribution within Japan. Hokkaidō; Honshū: Yamagata Pref., Tochigi Pref., Niigata Pref., Yamanashi Pref., *Nagano Pref., *Fukui Pref.; Kyūshū: Ōita Pref., Kumamoto Pref. (Maeto, 1986a; Fujie & Shimizu, 2015; Katayama & Fujie, 2017; present study).

Examined material. 1♂, Niigata Pref., Myōkō City, Suginosawa, alt. 720 m, 3.VIII.2012 (LT.), M. Itō leg. (OMNH); 1♀, Nagano Pref., Ueda City, Sugadaira-kōgen, Tsukuba Univ., alt. ca. 1,320 m, 26.VII–1.VIII.2015, S. Shimizu leg. (OMNH); 1♂, Fukui Pref., Ikeda Town, Mizuumi, Mt. Heko-san, alt. 1,400–1,460 m, 10.VI.2016, S. Shimizu leg. (OMNH).

Discussion

Five genera, two subgenera and 16 species were newly recorded from Japan in this study. Consequently, 30 genera, 11 subgenera and 113 species of Euphorinae are currently recognized in Japanese fauna. The number of genera from Japan is on the same level as those from the well-elucidated Palaearctic regions, i.e. Europe (29 genera), Russian Primorski Krai (28 genera), and China (32 genera) (Yu *et al.*, 2016). Moreover, some genera unrecorded but included in the key, *Allurus*, *Rilipertus*, *Syntretomorpha* and *Tainiterma*, are possibly added to Japanese fauna by further studies.

However, the number of Euphorine species recorded from Japan is still much less than those from Europe (261 species) and from Russian Primorski Krai (214 species) (Yu *et al.*, 2016). More intensive examination is required for Japanese species of many Euphorine genera, especially of *Centistes*, *Euphorus*, *Leiophron*, *Meteorus*, *Microctonus*, *Perilitus*, *Peristenus*, *Streblocera*, and *Syntretus*, which all have several or more unidentified species in the examined collections.

Distributional ranges of some genera (subgenera) are obviously restricted to certain areas in Japan Archipelago. For example, the species of *Cryptoxilos*, *Cosmophorus* (*Eucosmophorus*) and *Proclithrophorus* are all distributed only in the southwestern islands (Yaku-shima Island, Ryūkyū

Islands) of Japan. The species diversity of Euphorinae in Japan should be potentially higher than that in Russian Primorski Krai, whereas the former is currently only a half of the latter, because both temperate and subtropical areas are included in Japan. The Oriental part of Japan (Ryūkyū Islands and Ogasawara Islands) will be a target for further investigation.

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Table S1. Diagnostic character states for the genera of the Euphorinae in Japan.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
<i>Aridelus</i>	6			✓	*	✓				✓	✓	✓			✓	✓						
<i>Asiacentistes</i>	5					✓				✓	✓						✓			✓	✓	✓
<i>Centistes</i>	5-6				✓	✓					*						✓			✓	✓	*
<i>Centistina</i>	5		✓		✓		✓			✓	✓				✓			✓				
<i>Chrysopophthorus</i>	6			✓	✓	✓	✓				✓	✓			✓	✓						
<i>Cosmophorus</i>	4	✓				*				✓											✓	
<i>Cryptoxilos</i>	5					✓				✓	✓				✓							
<i>Dinocampus</i>	5		✓		✓	✓	✓			✓	✓				✓							
<i>Elasmosoma</i>	2								✓	✓	✓	✓	✓	✓						✓	✓	
<i>Euphorus</i>	5						*				✓				✓			*			✓	✓
<i>Holdawayella</i>	6						*				*				✓	✓						
<i>Leiophron</i>	5		*			*					*				✓	*					✓	
<i>Mama</i>	5		✓			✓	✓				✓				✓	✓						
<i>Marshiella</i>	4		*		✓	✓	✓			✓					✓	✓						
<i>Meteorus</i>	6				*	✓	✓			✓	✓	✓			✓	*	*	*	*			*
<i>Microctonus</i>	5				*	✓	✓			✓					✓			*				*
<i>Myiocephalus</i>	5				✓	✓				✓					✓		✓					
<i>Neoneurus</i>	2								✓	✓	✓	✓	✓							✓	✓	
<i>Orionis</i>	5				✓	✓	✓			✓	✓				✓	✓						
<i>Perilitus</i>	5				*	✓	✓			✓	✓				✓		*	*			*	*
<i>Peristenus</i>	5				✓	*	✓				✓				✓	✓					✓	✓
<i>Proclithrophorus</i>	5		✓			✓	✓			✓					✓			✓				
<i>Pygostolus</i>	5			✓	✓	✓	✓			✓	✓						✓	✓		✓	✓	✓
<i>Ropalophorus</i>	5		✓		✓	✓	✓			✓	✓				✓	✓		✓		✓	✓	
<i>Spathicopis</i>	6				✓	✓	✓			✓							✓	✓				
<i>Streblocera</i>	6		✓		*	*	✓			✓					✓	✓	*	*				*
<i>Syntretomorpha</i>	4						✓	✓							✓	✓					✓	
<i>Syntretus</i>	5				*	✓		✓							✓	*	*					*
<i>Townesilitus</i>	5				✓	✓	✓			✓					✓	✓						
<i>Wesmaelia</i>	6			✓	✓	✓	✓				✓				✓	✓						
<i>Zelee</i>	6				✓	✓	✓			✓	✓	✓			✓		✓	✓	✓			

A: No. of maxially palp segment; B: Antenna situated on a protuberance in front of eyes; C: Length of scape longer than third antennal segment; D: Apex of antenna with a spine; E: Occipital carina complete; F: Occipital carina fused with the hypostomal carina; G: Notauli present; H: Tarsal claws bifurcate; I: Marginal cell of forewing with additional cell; J: Vein M+CU1 of fore wing sclerotized; K: Vein 1-SR+M of fore wing present; L: Vein r-m of fore wing present; M: Trochantellus fused with femur; N: Arolium of female much longer than claw; O: First metasomal tergite petiolate, not sessile or subsessile; P: First metasomal tergite closed ventrally at least in basal half; Q: Laterope present; R: Dorsope present; S: Fourth and fifth metasomal tergites of ♀ largely densely setose; T: Ovipositor compressed; U: Ovipositor curved; V: Ovipositor sheath thickened. The asterisk in the matrix means various or uncertain.