

Original Article

Taxonomic Study of the Genera *Aptesis* Förster, 1850, and *Javra* Cameron, 1903 (Hymenoptera, Ichneumonidae, Cryptinae) associated with *Fagineura crenativora* (Hymenoptera, Tenthredinidae), with Description of a New Species

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Abstract. Two ichneumonid parasitoids of the genera *Aptesis* Förster, 1850, and *Javra* Cameron, 1903, associated with a serious forest pest of sawfly, *Fagineura crenativora* (Tenthredinidae, Nematinae), are studied. A new species, *A. flavirochanterus* sp. nov. is described. This species resembles *A. melana* Li & Sheng, 2013, and *A. opaca* (Cushman, 1937), but the females can be distinguished by the following combination of character states: hind trochanter and trochantellus largely white to yellow (black to brown in *A. melana* and *A. opaca*); first metasomal tergite 1.4–1.85 times as long as maximum width (1.3 times in *A. melana*); body length 3.5–5.5 mm (8.5–10.0 mm in *A. opaca*); ovipositor sheath longer than first metasomal tergite and 0.9–1.0 times as long as hind tibia (shorter than first metasomal tergite in *A. opaca* and 0.8 times as long as hind tibia in *A. melana*). A Korean species, *J. coreensis* (Uchida, 1930) is newly recorded from Japan with the first host record. Keys to Japanese species of both genera are also available

Key words: Far East Asia, natural enemy, sawfly, Tanzawa mountains, Taxonomy

Introduction

Outbreaks of the sawfly *Fagineura crenativora* Vikberg & Zinovjev, 2000 (Hymenoptera: Tenthredinidae) have been reported in beech forests of Japanese mountains and some of the trees have actually been damaged due to the cumulative feeding of sawflies (e.g. Shinohara *et al.*, 2000). Therefore, this species is known as a serious pest of the beech tree. In the Tanzawa Mountains of Kanagawa prefecture, central Japan, some methodologies towards its control have been applied (e.g., Taniwaki, 2013) and a natural enemy of *F. crenativora* has been searched. Field surveys demonstrated that parasitoid wasps are important natural enemies of *F. crenativora* (Taniwaki & Watanabe, 2012). Cryptinae is one of the important parasitoid groups

of the sawfly, but none of this group were identified. This lack of identification causes a problem in the biological control of *F. crenativora*, and thus a taxonomic study of these ichneumonids is needed.

The cryptine species associated with *F. crenativora* belong two tribes, i.e., Hemigasterini and Phygaedeontini. The former contains two genera, *Aptesis* Förster, 1850, and *Javra* Cameron, 1903. The latter contains three genera, *Endasys* Förster, 1869, *Glypticnemis* Förster, 1869, and *Medophron* Förster, 1869 (Taniwaki & Watanabe, 2012). Recently, as part of a taxonomic study of the parasitoids reported by Taniwaki & Watanabe (2012), we study the former group. As a result, we classified them into a new species, a newly recorded species from Japan and two unidentified males. In this study, we describe these species and provide identification keys of them.

The taxonomic position of Hemigasterini and Phygaedeontini were recently reclassified by Santos (2017) and he concluded that the former should be treated as Aptesini and the latter should be treated as a separate subfamily, Phygaedeontinae. In this study, however, we conveniently choose the classification proposed by Yu *et al.* (2012).

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Materials and methods

Materials used were from Kanagawa Prefectural Museum of Natural History, Odawara, Japan (KPMNH-NK), National Institute of Agro-Environmental Sciences, Tsukuba, Japan (NIAES), and Laboratory of Systematic Entomology, Hokkaido University, Sapporo, Japan (SEHU). A stereomicroscope (Nikon SMZ800) was used for observations. Photographs were taken by Olympus TG-4 digital camera joined with the stereo microscope. Digital images were edited using Adobe Photoshop® CS6. Morphological terminology follows that established by Gauld (1991). Eady (1968) is referred for microsculpture description. The following abbreviations are used in descriptions: basal mandibular width (BWM), length of malar space (MSL), segment of flagellum (F), ocello-ocular line (OOL), postocellar line (POL), metasomal tegite (T) and holotype (HT). The following abbreviations are used in material data and distribution: Malaise trap (MsT), female (F) and male (M).

Results

Taniwaki & Watanabe (2012) recorded two species of *Aptesis* and a single species of *Javra* as the parasitoid of *F. crenativora*, *Aptesis* sp. A, *A.* sp. B, and *Javra* sp. *Aptesis* sp. A is one of the dominant parasitoids and the remainders are rare parasitoids (Taniwaki & Watanabe, 2012).

We carefully examined the morphological characters of *Aptesis* and *Javra* species and compared with specimens and/or descriptions of other species of these genera.

By the result of comparison, we conclude the following three points. First, *Aptesis* sp. A is a new species. *Aptesis* sp. B may be a new species but should not be described because only a single male specimen was present. The female and male of *Javra* sp. sensu Taniwaki & Watanabe (2012) are separate species each other. The female is identified as *J. coreensis* (Uchida, 1930), while male of this species is undescribed. In this study, we newly describe *Aptesis* sp. A (female and male) as a new species, *A. flavitrochanterus* sp. nov., and newly record *J. coreensis* from Japan below. Two species of males recorded by Taniwaki & Watanabe (2012), *Aptesis* sp. B and *Javra* sp., are not examined in this study because both species are represented by only a single specimen.

Taxonomy

Subfamily Cryptinae Kirby, 1837

Tribe Hemigasterini

Genus *Aptesis* Förster, 1850

Aptesis Förster, 1850: 71. Type species: *Ichneumon sudeticus* Gravenhorst, 1815. Designated by Viereck (1914).

Pezoporus Förster, 1869: 181. Type species: *Ichneumon nigrocinctus* Gravenhorst, 1815. Name preoccupied.

Clypediodon Aubert, 1968: 7. Type species: *Aptesis* (*Clypediodon*) *flavifaciator* Aubert, 1968. Original designation.

Diagnosis. Townes (1970) proposed diagnosis of this genus. We refer it with some additional data of character states of Japanese species below. Clypeus weakly to moderately convex in lateral view, its apex truncate or somewhat arcuate (Figs 1B, 2B, 3A, B). Median 0.2 and more of apical margin of clypeus sharp, narrowly reflexed (Figs 1B, 2B, 3A, B). Mandible with two teeth, its upper tooth as long as (Fig. 3B) or shorter than lower tooth. Apical half of flagellum not strongly flattened below, not strongly tapered to apex (Figs 1A, 2A, 3A). Basal flagellar segments short and slender (Figs 1A, 2A, 3A), F2 shorter than 3.3 times as long as wide in lateral view. Propodeal spiracle not strongly elongate (Fig. 3E), at most 2.0 times as long as wide. Areolet pentagonal (Fig. 3C). Spiracle of T1 situated behind the mid-length (Fig. 3D). Postpetiole usually with a complete or incomplete dorsolateral longitudinal carina or ridge between its spiracle and apicolateral corner (Fig. 3D). T2 more or less polished (Figs 1A, F, 2A). Ovipositor straight, its upper valve without oblique or transverse teeth (Figs 1A, 3F).

Distribution. Holarctic, Oriental and Afrotropical regions (Yu *et al.*, 2012).

Remarks. Eleven species of this genus were previously recorded from Eastern Palaearctic region (Yu *et al.*, 2012; Li *et al.*, 2013). Japanese fauna of this genus is still poorly studied. We recognized seven species of this genus from Japan. Three of them are described species, *A. albibusalis* (Uchida, 1930), *A. albidipes* (Walker, 1874) and *A. opaca* (Cushman, 1937). In this study, we describe a new species, *Aptesis flavitrochanterus* sp. nov., which was previously recorded as *Aptesis* sp. A by Taniwaki & Watanabe (2012). The remainders may be undescribed or unrecorded species.

Females of Japanese species of this genus can be distinguished by the following preliminary key. Identification of males difficult, thus identification of the new species should be compared with the following original description.

**Key to Japanese species of the genus *Aptesis* with described species recorded from Eastern Palaearctic region
(female*)**

* Female of *A. albidipes* (Walker, 1874) and *A. chosensis* (Uchida, 1931) are unknown.

1. Metasomal tergites with conspicuous large red area(s) and/or hind femur reddish-brown to red.
..... *A. corniculata* Sheng, 2003 (from China); *A. elongata* Li & Sheng, 2013 (from China); *A. flagitator* (Rossi, 1791) (from Russia); *A. nigricoxa* Li & Sheng, 2013 (from China); *A. nigritula* (Thomson, 1885) (from Russia) (all are non-Japanese species)
- Metasomal tergites and hind femur nearly entirely black to brown (Fig. 1A). Metasomal tergites at most tinged with red on lateral and/or posterior margin(s). Hind femur at most narrowly tinged with red on base and apex.
..... 2
2. Hind tibia with a conspicuous basal white area, its apical border somewhat clearly defined. Apex of scutellum usually with a small white spot. Face 0.3–0.35 times as long as wide.
..... *Aptesis albibasalis* (Uchida, 1930)
- Hind tibia without a basal white area, at most tinged with brown basally (Fig. 1A, D, E). Scutellum entirely black (Fig. 1C). Other character states various.
..... 3
3. Ovipositor sheath 1.3 times as long as hind tibia.
..... *Aptesis* sp. A
- Ovipositor sheath shorter than 1.05 times as long as hind tibia.
..... 4
4. Face 0.3 times as long as wide. Hind coxa, trochanter and trochantellus entirely white.
..... *Aptesis* sp. B
- Face more than 0.35 times as long as wide. Hind coxa more or less darkened or black. Hind trochanter and trochantellus black to white.
..... 5
5. Antenna without a white band. Areolet transversely elongate. T1 2.2 times as long as maximum width. Small species, body length shorter than 5.0 mm.
..... *Aptesis* sp. C
- Antenna with a white band (Fig. 1A). Areolet ca. as long as its width (Fig. 3C). T1 various in length. Body length various.
..... 6
6. Lateral sides of areolet (= veins 2rs-m and 3rs-m) parallel or almost parallel. Face 0.35 times as long as wide. Ovipositor sheath 0.6 times as long as hind tibia.
..... *Aptesis grandis* Sheng, 1998 (from China)
- Lateral sides of areolet convergent anteriorly (Fig. 3C). Other character states various.
..... 7
7. Hind trochanter and trochantellus largely white to yellow (Fig. 1A). Face 0.4 times as long as wide.
..... 8
- Hind trochanter and trochantellus black to brown. Face variously in width.
..... 9
8. T1 1.4–1.85 times as long as maximum width. Dorsal surface of propodeum largely rugose posteriorly (Fig. 3E). Ovipositor sheath 0.9–1.0 (sometimes its base concealed under tergites) times as long as hind tibia. Inner orbit, coxae and base of hind tibia sometimes tinged with yellowish-brown to whitish-yellow (Figs 1A, B, D).
..... *Aptesis flavitrochanterus* sp. nov.
- T1 2.5 times as long as maximum width. Dorsal surface of propodeum largely mat posteriorly. Ovipositor sheath 0.9 times as long as hind tibia. Inner orbit, coxae and base of hind tibia blackish-brown to black.
..... *Aptesis* sp. D
9. Ovipositor sheath distinctly shorter than T1. Body length 8.5–10.0 mm.
..... *Aptesis opaca* (Cushman, 1937)
- Ovipositor sheath at most as long as T1. Body length sometimes shorter than 8.0 mm.
..... 10
10. T1 1.3 times as long as maximum width. Face 0.35–0.4 times as long as wide.
..... *Aptesis melana* Li & Sheng, 2013 (from China)
- T1 1.5–1.9 times as long as maximum width. Face 0.4 times as long as wide.
..... *Aptesis* spp.

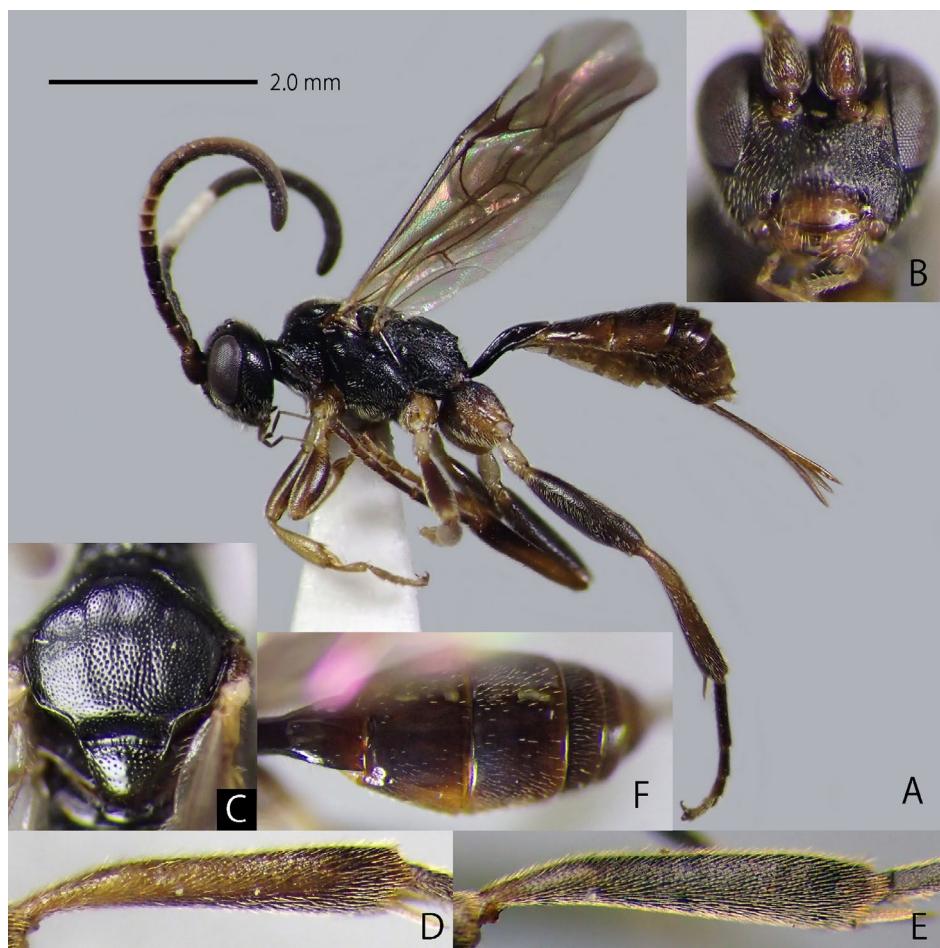


Fig. 1. *Aptesis flavitrochanterus* sp. nov., female (A—D, F, holotype, KPM-NK 5006655; E, paratype, KPM-NK 5006674). A, lateral habitus; B, head, frontal view; C, mesonotum, dorsal view; D, E, left hind tibia, anterior view; F, metasoma, dorsal view.

***Aptesis flavitrochanterus* sp. nov.
(Figs 1A–F, 2A–C, 3A–F)**

Aptesis sp. A Taniwaki & Watanabe, 2012: 6.

Type series. [Holotype] F, Kanagawa Pref., Kiyokawa Vil., Miyagase, Mt. Tanzawasan, Tennoji-one 1350 m alt., 24. XII. 2008 (coll. cocoon of *Fagineura crenativora*), 23. II. 2009 (em. from the cocoon), T. Taniwaki leg. (KPM-NK 5006655). **[Paratypes]** 1 M, same data of holotype except for 19. II. 2009 (em. from the cocoon) (KPM-NK 5006658); 2 M, same data of holotype except for 19. XI. 2008 (coll.), 16. II. 2009 (em. from the cocoon) (KPM-NK 5006659, 5006660); 1 F, same data of holotype except for 9. II. 2008 (coll.), 18. III. 2009 (em. from the cocoon) (KPM-NK 5006661); 1 F 2 M, same data of holotype except for 23. IV. 2008 (coll.), 4 (M), 18 (M), 24 (F). V. 2009 (em. from the cocoon) (KPM-NK 5006662–64); 1 F, same locality and collector of holotype, 16. III. 2009 (coll. cocoon of *Fagineura crenativora*),

19. IV. 2009 (em. from the cocoon), T. Taniwaki leg. (KPM-NK 5006665); 1 F, same locality and collector of holotype, 30. IV. 2009 (coll. cocoon of *Fagineura crenativora*), 3. V. 2009 (em. from the cocoon) (KPM-NK 5006666); 1 M, same locality and collector of holotype, 8. IV. 2009 (coll. cocoon of *Fagineura crenativora*), 3. V. 2009 (em. from the cocoon) (KPM-NK 5006666); 1 F, same locality and collector of holotype, 8. IV. 2009 (coll. cocoon of *Fagineura crenativora*), 8. V. 2009 (em. from the cocoon) (KPM-NK 5006669); 1 M, same locality and collector of holotype, 30. IV. 2009 (coll. cocoon of *Fagineura crenativora*), 20. V. 2009 (em. from the cocoon) (KPM-NK 5006670); 1 F, Kanagawa Pref., Kiyokawa Vil., Miyagase, Mt. Tanzawasan, Tennoji-one 1350 m alt., 16. V. 2013, T. Taniwaki leg. (FIT) (KPM-NK 5004398); 1 F, same locality and collector, 31. V. 2013 (KPM-NK 5004333); 2 F, same locality and collector, 15. VI. 2013 (KPM-NK 5004320, 5004327); 1 F, same locality and collector, 20. VI. 2013 (KPM-NK 5004321); 1 F, Kanagawa Pref., Kiyokawa Vil., Miyagase, Mt.



Fig. 2. *Aptesis flavitrochanterus* sp. nov., male (paratype, KPM-NK 5006658). A, lateral habitus; B, head, frontal view; C, outer surface of right flagellum.

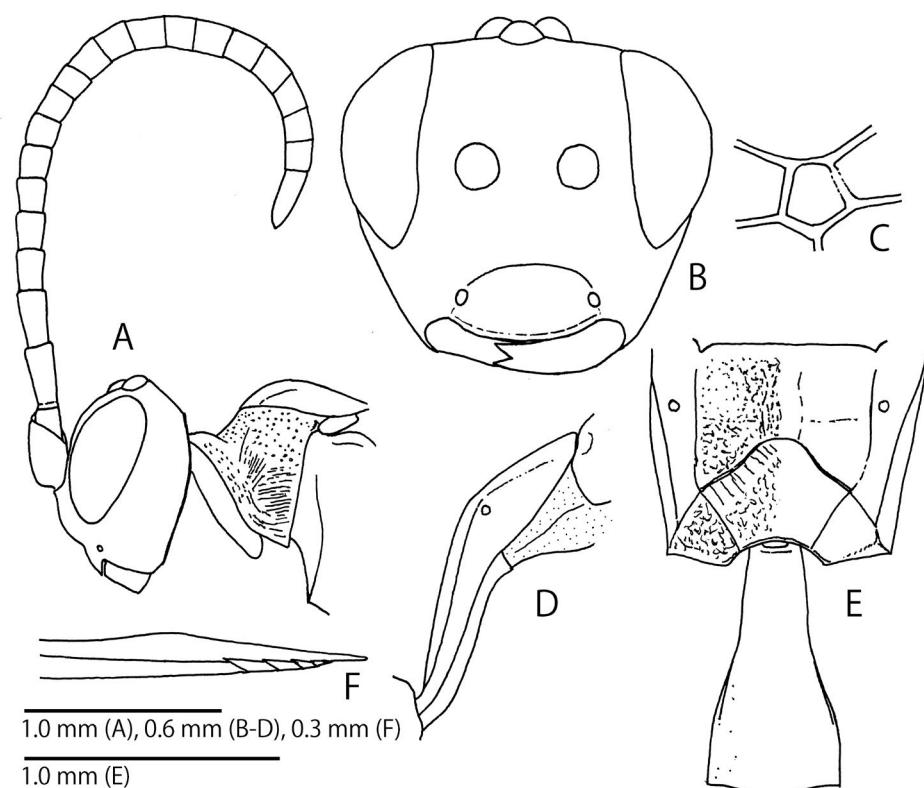


Fig. 3. *Aptesis flavitrochanterus* sp. nov., female (holotype, KPM-NK 5006655). A, head, antenna, and anterior part of mesosoma, lateral view, surface sculptures omitted except for pronotum; B, head, frontal view; C, areolet of right fore wing; D, T1, lateral view; E, propodeum and T1, dorsal view, surface sculptures omitted except for left half of area basalis, area superomedia, area externa, area dentipara, area postero, and T1; F, apical part of ovipositor, lateral view.

Tanzawasan 1550 m alt., 9. V. 2013, T. Taniwaki leg. (FIT) (KPM-NK 5004319); 3 F, same locality and collector, 15. VI. 2013 (KPM-NK 5004324, 5004329, 5004423); 2 F, same locality and collector, 20. VI. 2013 (KPM-NK 5004328, 5004330); 1 F, same locality and collector, 4. VII. 2013 (KPM-NK 5004323); 1 M, Kanagawa Pref., Yamakita Town, Kurokura, Mt. Hinokiboramaru 1550 m alt., 6. II. 2008 (coll. cocoon of *Fagineura crenativora*), 11. III. 2009 (em. from the cocoon), T. Taniwaki leg. (KPM-NK 5006671); 1 F, same locality, 21. V. 2013, T. Taniwaki leg. (FIT) (KPM-NK 5004332); 1 F, same locality and collector, 28. VI. 2013 (KPM-NK 5004322); 1 F, same locality and collector, 6. VII. 2013 (KPM-NK 5004331); 1 F, Kanagawa Pref., Yamakita Town, Nakagawa, Mt. Komotsurushiyama 1350 m alt., 21. VI. 2013, Taniwaki leg. (FIT) (KPM-NK 5004325); 1 F, Kanagawa Pref., Yamakita Town, Yoduku, Mt. Mikuniyama 1350 m alt., 21. VI. 2013, Taniwaki leg. (FIT) (KPM-NK 5004326); 1 F, same locality and collector, 4. VII. 2013 (KPM-NK 5004385); 1 F, Yamanashi Pref., Koushu City, Mt. Daibosatsu, Kaminikkawa-toge, 16. VI. 2007, H. Katahira leg. (KPM-NK 5006673); 1 F, Nagano Pref., Outaki Vil., Mt. Ontakesan, Tanohara 1800 m alt., 8. VIII. 2007, K. Watanabe leg. (KPM-NK 5006674).

Description. Female (n = 25). Body length 3.5–5.5 (HT: 5.3) mm. Body polished, smooth and punctate, covered with silver setae.

Head 0.6–0.65 (HT: 0.65) times as long as wide. Clypeus 0.45–0.5 (HT: 0.45) times as long as wide, punctures on ventral area sparser than dorsal area (Fig. 1B). Face 0.4 times as long as wide, weakly convex medially, interspace of punctures mat (Fig. 1B). OOL 0.9–2.0 (usually 1.0, HT: 1.0) times as long as POL. Occipital carina complete, its lower end connected with hypostomal carina distant from base of mandible. MSL 1.2–1.4 (HT: 1.2) times as long as BWM. Subocular sulcus absent. Malar space with a distinct mat area. Antenna with 19–21 (HT: 20) flagellomeres. F1 1.0–1.05 (HT: 1.05) times as long as F2. F2 1.7–2.0 (HT: 2.0) times as long as maximum depth in lateral view.

Mesosoma. Pronotum punctate, obliquely or longitudinally striated ventrally (Fig. 3A). Epomia present but weak (Fig. 3A). Mesonotum punctate, punctures on median part larger than other areas, with distinct, short notauli (Figs 1C, 3A). Mesopleuron without a large smooth area around episternal scrobe, its punctures partly longitudinally or obliquely confluent each other. Upper end of epicnemial carina not reached to anterior margin of mesopleuron (Fig. 3A). Subalar prominence convex. Lower division of metapleuron with a juxtacoxal carina,

its posterior end sometimes indistinct. Lateromedian longitudinal carinae and anterior transverse carina of propodeum absent or partly indistinctly present (Fig. 3E). Posterior transverse carina of propodeum and pleural carinae complete (Fig. 3E). Areas along posterior transverse carina of propodeum usually some longitudinal or irregular rugae (Fig. 3E). Propodeal apophysis developed but weak (Fig. 1A). Fore wing 3.6–4.8 (HT: 4.1) mm, without a ramulus. Anterior end of vein cu-a of fore wing opposite or almost opposite to posterior end of vein Rs+M. Lateral sides of areolet convergent anteriorly (Fig. 3C). Vein 1-cu of hind wing more than 6.0 times as long as vein cu-a of hind wing. Hind femur 3.8–4.1 (HT: 4.1) times as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T1 1.4–1.85 (HT: 1.85) times as long as maximum width, largely smooth, without median dorsal carinae, with dorsolateral carinae except for apex (Figs 1F, 3D, E). T2 1.1–1.4 (HT: 1.3) times as long as maximum width. T2 and T3 covered with fine punctures except for median large smooth area (Fig. 1F). T4–T7 finely and sparsely punctate. Ovipositor sheath longer than T1 and 0.9–1.0 (HT: 1.0) times as long as hind tibia, its base sometimes concealed under tergites and thus measurement difficult in this case. Apex of ovipositor as Fig. 3F.

Colouration (Figs 1A–F). Body (excluding wings and legs) black to blackish brown, except for: palpi dark brown, flagellum with a white band (usually present on F6–F10) and a ventral reddish-brown surface on apical segments, mandible and clypeus more or less partly tinged with reddish-brown, inner orbit sometimes with a pair of reddish-brown markings along antennal sockets, tegula sometimes tinged with brown, T2–T7 sometimes tinged with brown, and ovipositor reddish-brown. Wings hyaline, with dark brown to blackish-brown veins and pterostigma except for yellow wing base. Legs black to blackish brown, except for: trochanters and trochanteli white to whitish-yellow (sometimes more or less darkened), fore and mid tibiae and tarsi largely yellowish-brown, apex and base of femora narrowly tinged with yellowish-brown, coxae and basal part of hind tibia sometimes tinged with yellowish-brown.

Male (n = 9). Similar to female. Body length 5.5–7.1 mm. Clypeus 0.4–0.5 times as long as wide. Face 0.45–0.5 times as long as wide. OOL 1.3–1.8 times as long as POL. MSL 0.6–0.7 times as long as BWM. Antenna with 25–27 flagellomeres. F2 2.0–2.2 times as long as maximum depth in lateral view, with tyloids on F11–14 (sometimes also F10 and F15) (Fig. 2C). Fore wing 4.7–5.8 mm. Hind femur 4.4–4.5 times as long as maximum width in lateral view.

T1 2.35–2.8 times as long as maximum width. T2 0.75–1.2 times as long as maximum width. T2–T7 entirely covered with punctures. Apex of paramere beyond the apex of aedeagus. Face whitish yellow except for a small median black area below antennal sockets (Fig. 2B). Antenna without a white band and usually without a ventral reddish-brown area (Fig. 2A). Clypeus, malar space, ventral surface of scape, and apex of pedicel whitish yellow (Fig. 2B). Tegula tinged with whitish-yellow laterally (Fig. 2A). Thyridium and posterior margin of T2 reddish-brown. Fore and mid legs usually paler than female (Fig. 2A).

Egg. White, elongate, its length ca. 1.0 mm (Taniwaki & Watanabe, 2014).

Distribution. Japan (Honshu).

Etymology. The specific name is from the white trochanter of hind leg.

Bionomics. Host is *Fagineura crenativora* (common species of parasitoid complex of the sawfly) (Taniwaki & Watanabe, 2012, 2014). Adult emerged from host cocoon (Taniwaki & Watanabe, 2012, 2014). The ovipositor behaviour was reported by Taniwaki & Watanabe, i.e., 1) adult female initially dug into the soil to search for cocoons of their host, 2) on the detection of cocoons, they laid their eggs inside the cocoon, 3) the eggs can be easily dropped from the body of host inside cocoons.

Remarks. This species resembles *A. melana* and *A. opaca*, but its females can be distinguished by the following combination of character states: hind trochanter and trochantellus largely white to yellow (black to brown in *A. melana* and *A. opaca*); T1 1.4–1.85 times as long as maximum width (1.3 times in *A. melana*); body length 3.5–5.5 mm (8.5–10.0 mm in *A. opaca*); ovipositor sheath longer than T1 and 0.9–1.0 times as long as hind tibia (shorter than T1 in *A. opaca* and 0.8 times as long as hind tibia in *A. melana*). The males of this species can be distinguished from other Japanese species and *A. melana* by the following combination of characters: face entirely yellow to white except for median dorsal area (black in *A. albibasalis*); clypeus entirely yellow to white; tyloids of antenna present on F10–F15 (F13–19 in *A. albibasalis*); hind tarsus blackish-brown to black (with a yellowish-brown to white area in *A. opaca*, *A. albidipes* and *A. melana*).

Genus *Javra* Cameron, 1903

Javra Cameron, 1903: 47. Type species: *Javra parviceps* Cameron, 1903. Monobasic.

Cnemocryptus Cameron, 1903: 38. Type species: *Cnemocryptus validicornis* Cameron, 1903 (= *Javra*

parviceps Cameron, 1903). Monobasic.

Finchra Cameron, 1907: 463. Type species: *Finchra gracilis* Cameron, 1907. Monobasic.

Monocryptus Hellén, 1957 (“1956”): 135. Type species: *Cratocryptus opacus* Thomson, 1873. Monobasic.

Diagnosis. Townes (1970) proposed diagnosis of this genus. We refer it with some additional data of character states of Japanese species below. Mandible with two teeth, its upper tooth as long as or shorter than lower tooth. Flagellum slender (Figs 4A, 5A), F2 3.0–5.5 (female) or 2.7–4.0 (male) times as long as depth in lateral view. Apical half of flagellum not strongly flattened below, not strongly tapered to apex (Figs 4A, 5A). Propodeal spiracle not strongly elongate (Fig. 5D), at most 2.0 times as long as wide. Arealt pentagonal, rectangular, or quadrangular. T2 mat (Fig. 4C). Spiracle of T1 situated behind the mid-length (Fig. 5C). Ovipositor straight, its upper valve without oblique or transverse teeth (Fig. 5E). Clypeus ca. 0.5 times as long as wide in male.

Distribution. Holarctic and Oriental regions (Yu *et al.*, 2012).

Remarks. Two species, *J. coreensis* and *J. teranishii* (Uchida, 1952), were previously recorded from Eastern Palaearctic region (Yu *et al.*, 2012). Japanese fauna of this genus is still poorly studied. We recognized eight species of this genus from Japan. Three of them are described species, *J. coreensis*, *J. taniguchiae* (Uchida, 1956), and *J. teranishii*. In this study, we record *J. coreensis* from Japan for the first time, which was previously recorded as female of *Javra* sp. by Taniwaki & Watanabe (2012). The remainders may be undescribed or unrecorded species. Japanese species of this genus can be identified by the following key.

Key to Japanese species of the genus *Javra*

1. Females 2 (male unknown in all species)
- Males 9 (female unknown in all species)
2. Scutellum with a conspicuous yellow marking. Lateral sides of areolet (= veins 2rs-m and 3rs-m) convergent anteriorly. 3
- Scutellum black (Fig. 4B). Lateral sides of areolet parallel or convergent. 4
3. Lateral section of anterior transverse carina of propodeum complete. F2 3.3 times as long as depth in lateral view. Hind tarsus with a white area. Ovipositor sheath 0.75-0.8 times as long as hind tibia. *Javra teranishii* (Uchida, 1952)
- Lateral section of anterior transverse carina of propodeum indistinct. F2 4.0 times as long as depth in lateral view. Hind tarsus without a white area. Ovipositor sheath 0.85 times as long as hind tibia. *Javra* sp. A
4. Hind trochanter and trochantellus whitish-yellow to white. Lateral section of anterior transverse carina of propodeum largely indistinct. Lateral sides of areolet convergent anteriorly. Ovipositor sheath 0.85-1.0 times as long as hind tibia. *Javra* sp. B
- Hind trochanter and trochantellus blackish-brown to black (Fig. 4A). Other character states various. 5
5. F2 5.0 times as long as depth in lateral view. Hind tarsus with a conspicuous white band. Areolet slightly wider than long, its lateral sides parallel. Ovipositor sheath ca. 1.2 times as long as hind tibia. *Javra* sp. C
- F2 shorter than 4.5 times as long as depth in lateral view. Hind tarsus without a conspicuous white band (Fig. 4A). Other character states various. 6
6. Ovipositor sheath longer than 1.0 times as long as hind tibia. Lateral section of anterior transverse carina of propodeum indistinct. Lateral sides of areolet convergent anteriorly. Apex of metasoma with a conspicuous white area. Ovipositor sheath 1.0-1.1 times as long as hind tibia. 7
- Ovipositor sheath 0.65-0.8 times as long as hind tibia. Lateral section of anterior transverse carina of propodeum complete or partly indistinct (Fig. 5D). Lateral sides of areolet parallel or convergent. Apex of metasoma without a conspicuous white area. 8
7. T1 1.8 times as long as maximum width. Ovipositor sheath 1.1 times as long as hind tibia. *Javra* sp. D
- T1 2.6 times as long as maximum width. Ovipositor sheath 1.0 times as long as hind tibia. *Javra* sp. E
8. F2 3.8-4.5 times as long as depth in lateral view. *Javra coreensis* (Uchida, 1930)
- F2 3.0-3.4 times as long as depth in lateral view. *Javra* sp. F (variation of *J. coreensis*??)
9. Hind tarsus with a broad white area. Hind trochanter black to reddish-brown, without a yellowish-white area. Malar space and scutellum black. Lateral section of anterior transverse carina of propodeum complete. Lateral sides of areolet almost parallel. Antenna with 27 flagellomeres. F2 0.9 times as long as F1, 2.5 times as long as width in lateral view. MSL 1.0 times as long as BWM. T1 2.3 times as long as maximum width. *Javra taniguchiae* (Uchida, 1956)
- Combination of characteristics above lacking. *Javra* spp. (including male of *J.* sp. by Taniwaki & Watanabe (2012))

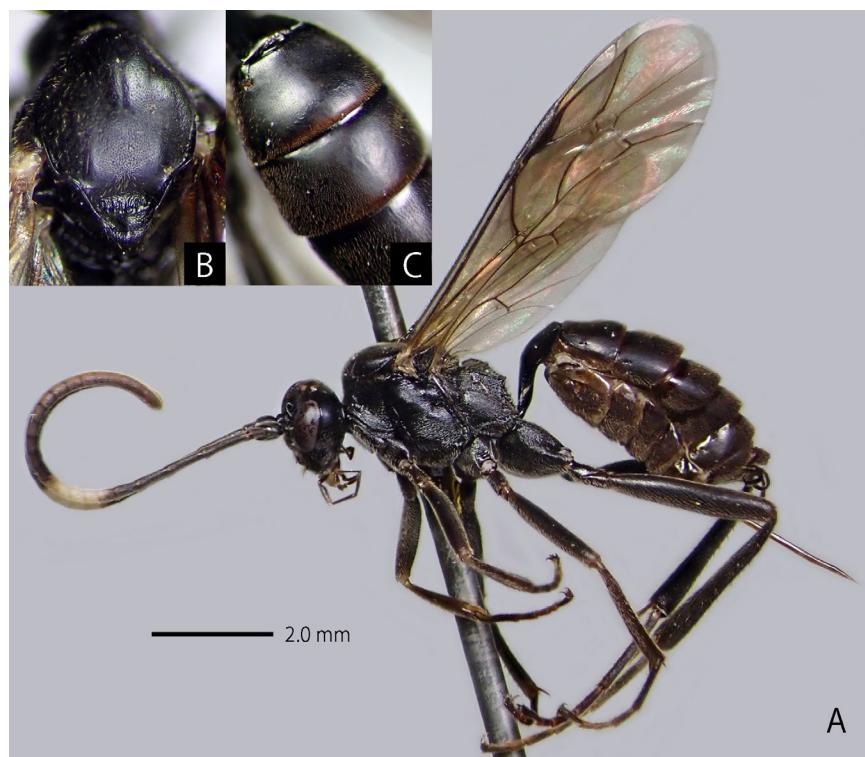


Fig. 4. *Javra coreensis* (Uchida, 1930), female (KPM-NK 5004375). A, lateral habitus; B, mesonotum, dorsal view; C, T2 and T3, dorsolateral view.

Javra coreensis (Uchida, 1930)

(Figs 4A–C, 5A–E)

Acanthocryptus coreensis Uchida, 1930: 330.

Javra sp. Taniwaki & Watanabe, 2012: 6. In part (female), misident.

Description. Female ($n = 35$). Body 5.0–7.5 mm. Body polished, mat, covered with silver setae.

Head 0.6 times as long as wide. Clypeus 0.4–0.5 times as long as wide, weakly convex in lateral view (Fig. 5A), covered with large, sparse punctures dorsally, smooth ventrally. Face 0.4–0.45 times as long as wide, weakly convex in lateral view (Fig. 5A), punctate. Frons weakly concave, punctate except for smooth area above each antennal socket. OOL 1.0–1.2 times as long as POL. Occipital carina complete, its lower end connected with hypostomal carina distant from base of mandible. MSL 1.2–1.3 times as long as BWM. Antenna with 22–24 flagellomeres, F1 1.2–1.3 times as long as F2. F2 3.8–4.5 times as long as maximum depth in lateral view.

Mesosoma. Pronotum without epomia. Mesonotum with notauli anteriorly. Scutellum weakly convex, covered with sparse punctures. Mesopleuron covered with irregular to longitudinal rugae, without a smooth area around episternal scrobe. Upper end of epicnemial carina closed to anterior margin of mesopleuron. Subalar prominence convex.

Lower division of metapleuron with a complete juxtacoxal carina. Propodeal carinae complete or sometimes lateral section of anterior transverse carina and median section of lateral longitudinal carinae partly indistinct (Fig. 5D). Propodeal apophysis well developed (Fig. 4A). Fore wing 5.5–7.0 mm. Anterior end of vein cu-a of fore wing opposite or slightly distad from posterior end of vein Rs+M. Lateral sides of areolet parallel (Fig. 5B) or weakly convergent anteriorly. Vein 1-cu of hind wing more than 6.0 times as long as vein cu-a of hind wing. Legs covered with gold setae. Hind femur 5.7–6.3 times as long as maximum depth in lateral view. Tarsal claws simple.

Metasoma. T1 2.05–2.35 (usually 2.1–2.2) times as long as maximum width, with median dorsal carinae except for postpetiole, with dorsolateral carinae except for apex (Fig. 5D). T2 0.65–0.75 times as long as maximum width. Ovipositor sheath 0.7–0.8 times as long as hind tibia. Apex of ovipositor as Fig. 5E, basal two teeth longer than apical teeth.

Colouration (Figs 4A–C). Body (excluding wings) black to blackish brown, except for: white band of flagellum (usually F5–F9); ventral surface of apical part of flagellum usually with a large reddish-brown area; mandible partly tinged with yellowish-brown; fore tibial spur yellowish-brown; base and apex of all legs and base of all tibiae more or less tinged with reddish-brown to yellowish-brown; posterior margin of each metasomal tergites sometimes

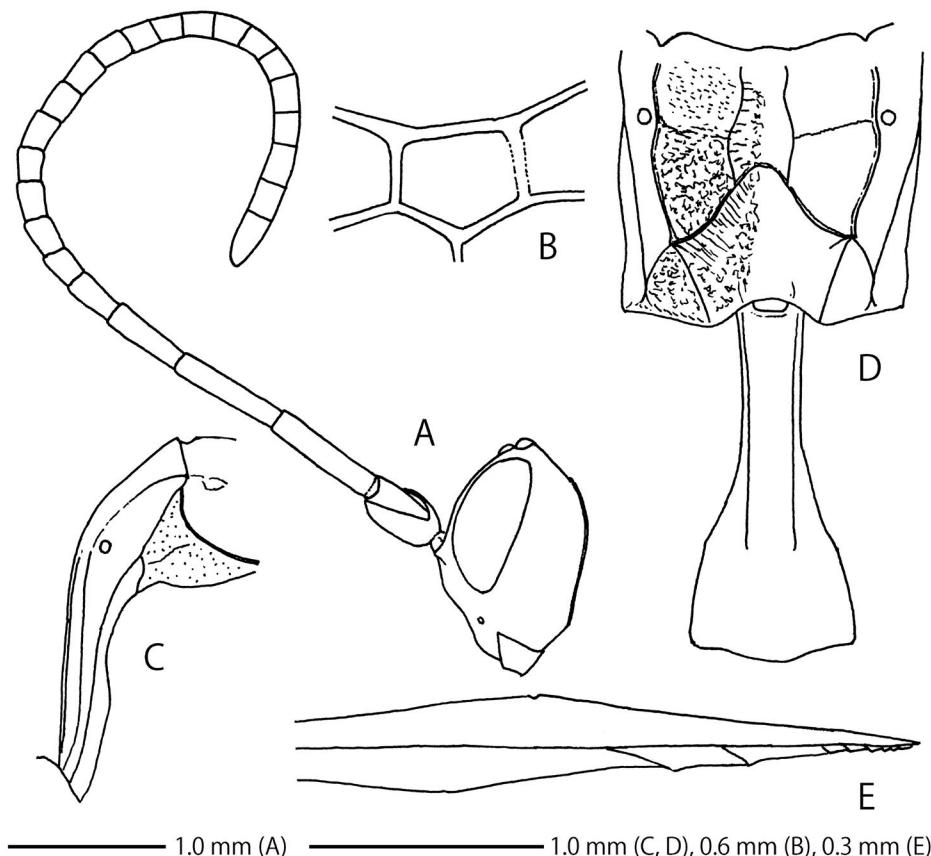


Fig. 5. *Javra coreensis* (Uchida, 1930), female (KPM-NK 5004375). A, head and antenna, lateral view; B, arolet of right fore wing; C, T1, lateral view; D, propodeum and T1, dorsal view, surface sculptures omitted except for left half of area basalis, area superomedia, area externa, area dentipara, and area postero; E, apical part of ovipositor, lateral view.

narrowly tinged with reddish-brown; ovipositor reddish-brown. Wings hyaline, with dark brown to blackish-brown veins and pterostigma except for yellow wing base.

Male. Unknown.

Materials examined. JAPAN: 1 F, Kanagawa Pref., Kiyokawa Vil., Miyagase, Mt. Tanzawasan, Tennojionne 1350 m alt., 8. IV. 2009 (coll. cocoon of *Fagineura crenativora*), 1. V. 2009 (em. from the cocoon), T. Taniwaki leg. (KPM-NK 5006654); 1 F, same locality and collector, 15. VI. 2013 (FIT) (KPM-NK 5004376); 3 F, same locality and collector, 20. VI. 2013 (KPM-NK 5004356, 5004358, 5004377); 1 F, same locality and collector, 29. VI. 2013 (KPM-NK 5004365); 3 F, Kanagawa Pref., Kiyokawa Vil., Miyagase, Mt. Tanzawasan 1550 m alt., 20. VI. 2013, T. Taniwaki leg. (FIT) (KPM-NK 5004361, 5004380, 5004382); 4 F, same locality and collector, 29. VI. 2013 (KPM-NK 5004357, 5004360, 5004364, 5004381); 3 F, same locality and collector, 29. VI. 2013 (KPM-NK 5004359, 5004373, 5004375); 6 F, Kanagawa Pref., Yamakita Town, Kurokura, Mt. Hinokiboramaru 1550 m alt., 23. V. 2013, T. Taniwaki leg. (FIT) (KPM-NK 5004353–54, 5004367, 5004370,

5004372, 5004374); 1 F, same locality and collector, 14. VI. 2013 (KPM-NK 5004369); 2 F, same locality and collector, 23. VI. 2013 (NIAES); 2 F, same locality and collector, 28. VI. 2013 (KPM-NK 5004366, 5004368); 6 F, same locality and collector, 6. VII. 2013 (KPM-NK 5004350–52, 5004362–63, 5004371). KOREA: 1 F (lectotype), Sambo, 29. VII. 1922, T. Uchida leg. (SEHU).

Distribution. Japan (Honshu) and Korea.

Bionomics. Host is *Fagineura crenativora* (rare species in the parasitoid complex of the sawfly) (Taniwaki & Watanabe, 2012). Adult emerged from host cocoon (Taniwaki & Watanabe, 2012).

Remarks. This is the first record from Japan. *F. crenativora* is also the first host record of this species.

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摘要

渡辺恭平・谷脇 徹, 2018. ブナハバチ（ハチ目、ハバチ科）と関係がある *Aptesis* 属および *Javra* 属（ハチ目、ヒメバチ科、トガリヒメバチ亜科）の 1 新種の記載を伴う分類学的研究。神奈川県立博物館研究報告（自然科学）, (47): 73–84. [Watanabe, K. & T. Taniwaki, 2018. Taxonomic Study of the Genera *Aptesis* Förster, 1850, and *Javra* Cameron, 1903 (Hymenoptera, Ichneumonidae, Cryptinae) associated with *Fagineura crenativora* (Hymenoptera, Tenthredinidae), with Description of a New Species. *Bull. Kanagawa Prefect. Mus. (Nat. Sci.)*, (47): 73–84.]

重要な森林害虫のハバチであるブナハバチ（ハチ目、ハバチ科）に寄生する *Aptesis* と *Javra*（ハチ目、ヒメバチ科、トガリヒメバチ亜科）に属する、2 種のヒメバチ科寄生蜂を検討した。*Aptesis*においては新種 *A. flavitrochanterus* を記載した。本種は中国から知られる *A. melana* Li & Sheng, 2013 および日本から知られる *A. opaca* Cushman, 1937 に形態的に似るが、後脚転節および第 2 転節の色彩、後体節第 1 背板、体長、産卵管の長さにより区別できる。*Javra*においては朝鮮半島から知られる日本新産種の *J. coreensis* (Uchida, 1930) を記録した。日本に産する両属の種の検索表を提供した。