

# Review of the genus *Apophua* (Hymenoptera:Ichneumonidae: Banchinae:Glyptini) from South Korea

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## 한국산 쌍점박이납작맴시벌속 (벌목, 맴시벌과, 가시뿔맴시벌아과, 배고랑뿔맴시벌족)에 관한 고찰

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**ABSTRACT:** Previously, only one species belonging to the genus *Apophua* was recorded from South Korea by Kim (1955). Here, six additional species, *A. cicatricosa*, *A. evanescens*, *A. honmai*, *A. stena*, *A. sugaharai* and *A. tobensis*, are reported for the first time in South Korea. In this paper, we provide a key to the Eastern Palearctic species of *Apophua* and diagnoses, as well as photographs of South Korean species.

**Key words:** Taxonomy, Glyptini, South Korea, New record

**초록:** 이전까지 한국산 점박이납작맴시벌속은 1955년 김에 의해 보고된 1종이 유일했으나, 본 연구를 통해 6미기록종을 처음으로 보고한다. 또한 본 논문에서는 동구북구지역에 보고된 점박이납작맴시벌속의 검색표와 한국산 점박이납작맴시벌속의 기재 및 사진을 제공하였다.

**검색어:** 분류, 배고랑뿔맴시벌족, 한국, 미기록

Tribe Glyptini are easily distinguished from those of other tribes by the presence of tergites with oblique grooves. This tribe is a cosmopolitan group, comprising 577 species within 14 genera. To date, 105 species have been reported from the Eastern Palearctic region, whereas only one species has been reported from South Korea by Kim (1955). This tribe is known to consist of koinobiont endoparasitoids of lepidopteran larvae such as Tortricidae, Lycaenidae or Hymenoptera such as Ichneumonidae. A moderately large genus of Glyptini, *Apophua*, contains 37 species in the world (Yu et al., 2012; Watanabe and Maeto, 2014). Among them, only 12 species are from the Eastern

Palearctic region. This group was known as a parasitoid of especially leaf-roll larva of Lepidoptera (Tortricidae) (Kamijo, 1973; Momoi et al., 1975). Also, they attack lepidopteran larva such as Noctuidae, Zygaenidae, coleopteran larva such as Attelebidae, Cerambycidae, Curculionidae (Yu et al., 2012).

In this study, we report the genus *Apophua* with a recorded species, *A. bipunctoria* (Thunberg, 1822), and six newly recorded species, *A. cicatricosa* (Ratzeburg, 1848), *A. evanescens* (Ratzeburg, 1848), *A. honmai* Momoi, 1978, *A. stena* (Momoi, 1963), *A. sugaharai* Momoi, 1978 and *A. tobensis* (Uchida, 1928), from South Korea. Diagnoses, figures of morphological features of South Korean species and a key to the Eastern Palearctic species of the genus *Apophua* are also provided.

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## Materials and Methods

This study is based on materials from the ichneumonids collection at Yeungnam University, South Korea. All examined specimens are deposited in the Animal Systematic Laboratory of Yeungnam University (YNU, Gyeongsan, South Korea). Over 100 specimens of the genus *Apophua* are studied. Specimens were collected with Malaise traps (M.T.) as well as by sweeping. Collection sites are abbreviated based on South Korean provinces as follows: **CB**, Chungcheongbuk-do; **CN**, Chungcheongnam-do; **GB**, Gyeongsangbuk-do; **GG**, Gyeonggi-do; **GN**, Gyeongsangnam-do; **GW**, Gangwon-do; **JB**, Jeollabuk-do; **JN**, Jeollanam-do. Other abbreviations used in this paper are: **HABERMEHL**, Naturmuseum Senckenberg, Senckenberganlage, Germany; **HU**, Systematic Entomology, Faculty of Agriculture, Hokkaido University, Japan; **IZU**, Instytut Zoologiczny Uniwersytetu, Sienkiewicza 21, Wrocław, Poland; **UU**, Uppsala University, Zoologiska Institutionen, Entomologiska Avdelningen, Sweden; **MOMOI**, Kobe University, Faculty of Agriculture, Department of Entomology, Japan; **ZI**, Zoologiska Institutionen, Helgonavägen, Sweden; **TS**, Type species; **TD**, Type depository; **TL**, Type locality.

Specimens are examined using an AxioCam MRc5 camera attached to a stereo microscope (Zeiss SteREO Discovery. V20; Carl Zeiss, Göttingen, Germany), processed using the AxioVision SE64 software (Carl Zeiss), and optimized with a Delta imaging system (i-solution, IMT i-Solution Inc. Vancouver, Canada). The morphological terminology is mostly that of Townes (1969). Distribution data and host records are taken from Yu et al. (2012).

## Results and Discussion

### Systematic accounts

Family Ichneumonidae Latreille, 1802 맵시벌과

Subfamily Banchinae Wesmael, 1845 가시뿔맵시벌아과

Tribe Glyptini Cushman & Rohwer, 1920 배고랑뿔맵시벌속 (신칭)

Genus *Apophua* Morley, 1913 점박이납작맵시벌속 (개칭)

*Apophua* Morley, 1913: 231. TS: *Apophua carinata* Morley, 1913.

**Diagnosis.** Frons without promontory. Apex of clypeus convex. Upper part of occipital carina incomplete. Genal carina strongly sinuate. Epomia absent to weakly present. Prepectal carina present. Propodeum usually with carinae. Areolet absent. Nervellus intercepted at lower part. First tergite with complete dorsolateral carina, median dorsal carina reaching near its middle part. Usually 2nd to 4th tergites with oblique grooves.

### Key to the Eastern Palaearctic species of the genus *Apophua* (modified from Watanabe and Maeto, 2014)

1. 1st to 3rd tergites with strong median longitudinal carina. Anterior and posterior margin of 1st tergite yellow. Posterior margin of all other tergites with yellow line. Face strongly transversely striated by coalescent punctures. Upper margin of pronotum with conspicuous yellow stripe. Scutellum with yellow marking. Hind coxa reddish brown. Hind femur and tibia completely blackish brown. .... *A. elegans*
- 1st to 3rd tergites with weak and partially indistinct median longitudinal carina, or without carina. Face weakly transversely striated by coalescent punctures. Hind leg largely yellowish brown or nearly entirely blackish brown. .... **2**
2. 2nd tergite longer than wide, its length 1.1-1.3 times as long as the maximum width. Tergites almost smooth, strongly shiny with strong blue reflection. Epicnemial carina absent laterally. Propodeal carinae weak, usually absent except for posterior transverse carina and pleural carina. Yellow part of pronotum restricted near the lateroposterior corner. Median dorsal carina of 1st tergite present only in the basal part. .... *A. evanescens*
- 2nd tergite shorter than 1.1 times as long as the maximum width, usually square or transverse. Tergites more or less punctate, weakly to rather strongly shiny. Epicnemial carina present laterally or absent. Propodeal carinae except for posterior transverse carina and pleural carina absent to present. Median dorsal carina of 1st tergite various, usually complete. .... **3**
3. Epicnemial carina absent laterally. Fore coxa with ridge. Scutellum black. Median dorsal carina of 1st tergite present only near base. .... **4**
- Epicnemial carina present laterally. Scutellum usually with yellow marking. Median dorsal carina of 1st tergite well

- developed, or if nearly absent, 1st to 3rd tergites reddish brown or hind leg largely blackish brown. .... 5
4. Malar space about 0.9-1.0 times as long as basal mandibular width. .... *A. aquilonia*  
 - Malar space about 1.5 times as long as basal mandibular width. .... *A. genalis*
5. Hind femur and tibia blackish brown in lateral view. Hind coxa largely blackish brown. Upper margin of pronotum and scutellum yellow. Tergites black. .... 6  
 - Hind femur and tibia reddish brown to brown in lateral view. Hind coxa reddish brown. Upper margin of pronotum and scutellum yellow or sometimes largely black. Tergites sometimes partly tinged red. .... 7
6. Ovipositor long, its sheath 2.9-3.0 times as long as hind tibia. Hind coxa with yellow marking dorsally. Median dorsal carina of 1st tergite extending to at least present basal 0.6. .... *A. tobensis*  
 - Ovipositor short, its sheath 1.9-2.0 times as long as hind tibia. Hind coxa without yellow markings dorsally. Median dorsal carina of 1st tergite largely obsolete posteriorly, distinct area shorter than basal 0.5. .... *A. yamato*
7. Median dorsal carina of 1st tergite shorter than basal half. 1st to 3rd tergites entirely (female) or partly (male: as posterior broad band) tinged with yellowish red. Length of 2nd tergite distinctly shorter than wide. Upper margin of pronotum with yellow stripe. .... *A. maetai*  
 - Median dorsal carina of 1st tergite almost complete, usually longer than basal 0.8. 1st to 3rd tergites entirely black, or in male of *A. sugaharai* with yellow posterior band, or if tinged reddish brown, yellow area on upper margin of pronotum sometimes restricted to small spot before tegula. .... 8
8. Posterior margin of all tergites (in male) or 4th tergite and all following tergites (in female) with conspicuous yellow or white band. Propodeum usually with yellowish area posteriorly. Upper margin of pronotum with yellow stripe. Surface of tergites with blue reflection. .... *A. sugaharai*  
 - Posterior margin of 4th tergite and following tergites always without white or yellow band. Propodeum without yellow area. .... 9
9. Small species, body length 6.5-10.5 mm (usually less than 9.0 mm). Yellow area on upper margin of pronotum always restricted as small spot on posterior angle. Anterior half of

- scutellum black. 2nd tergite square, its length 1.0 times as long as its maximum width. .... *A. stena*  
 - Large species, its body length 8.5-11.0 mm. Yellow area of pronotum always large and broad, present along its upper margin. Anterior half of scutellum usually yellow laterally. .... 10
10. Slender species. 1st to 3rd tergites usually without median longitudinal carina except at base of 2nd and 3rd tergites. First tergum 1.6-1.9 times as long as wide, second tergum usually square. All tergites with strong blue reflection. ...  
 .... *A. honmai*  
 - Robust species. 1st to 3rd tergites with or without median longitudinal carina. All tergites without strong blue reflection. .... 11
11. 1st to 3rd tergites with median longitudinal carina. Curved section of hypostomal carina ended at base of mandible. .... *A. bipunctoria*  
 - 1st to 3rd tergites without median longitudinal carina. Curved section of hypostomal carina ended far from base of mandible. .... *A. cicatricosa*

*Apophua bipunctoria* (Thunberg, 1822) 쌍점박이납작맷시벌 (Figs 1A-D)

*Ichneumon bipunctoria* Thunberg, 1822: 281. Type: female, TL: Sweden, TD: UU.

*Ichneumon cubitoria* Thunberg, 1822: 281. Type: female, TL: Sweden, TD: UU.

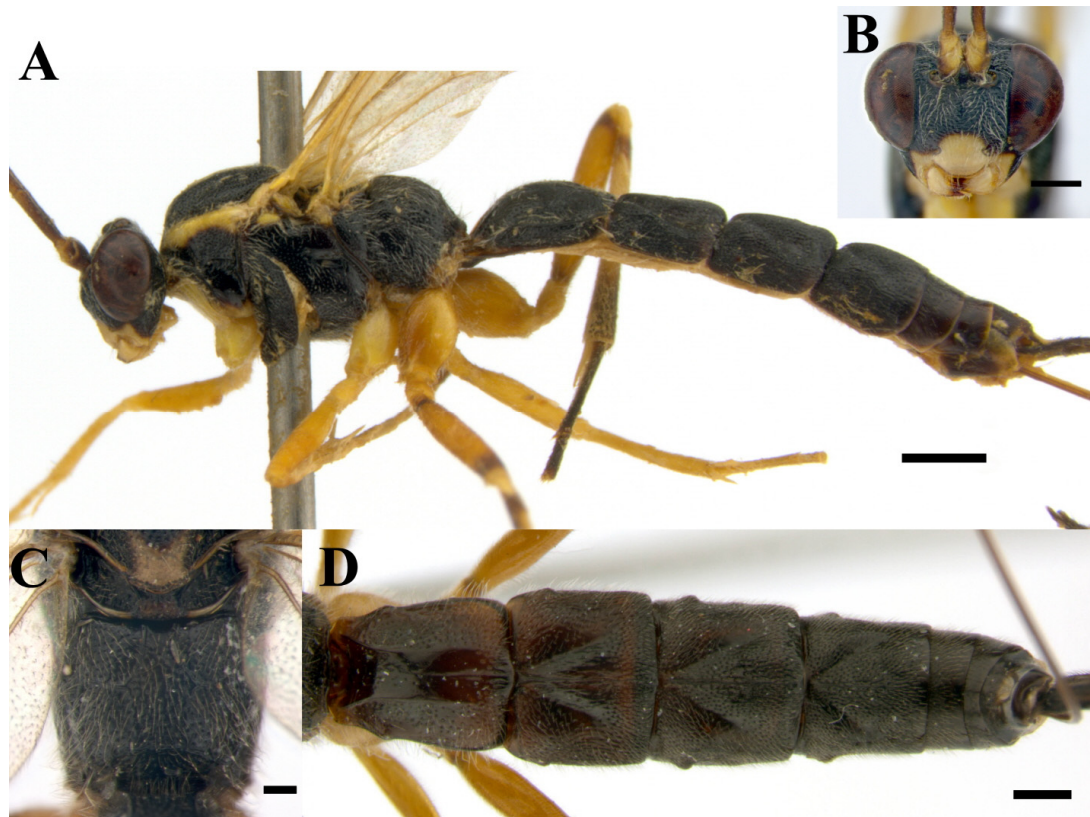
*Glypta flavolineata* Gravenhorst, 1829: 27. Type: male, TL: Poland, TD: IZU.

*Glypta baltica* Habermehl, 1926: 331. Type: female, TL: Germany, TD: HABERMEHL.

**Diagnosis. Female.** Body length. 9.0-10.0 mm. Fore wing 7.0-8.3 mm.

**Color.** Black. Antenna brown. Dorsal part of scape black with yellow ventral part (fig. 1B). Upper margin of pronotum yellow (fig. 1A). Hind femur brown except for black basal and apical part. Tibia yellow with black subapical and basal part. Tarsus and tarsal claw black. All tergites without yellow line.

Malar space about as long as basal mandibular width. Antenna with 47 flagellomeres. 1st flagellomere 1.7 times as long as 2nd flagellomere. Lateromedian longitudinal carina of



**Fig. 1.** *Apophua bipunctoria*. (A) Habitus in lateral view, (B) Head in frontal view, (C) Propodeum, (D) Abdomen in dorsal view. Scale bars: 1 mm for A; 0.5 mm for B, D; 0.2 mm for C.

propodeum distinct at anterior half (fig. 1C). Hind wing with nine hamuli. Apical part of 1st tergite 1.3 times as wide as basal part, its median dorsal carina complete except for posterior part, median longitudinal carina present at posterior half. 2nd and 3rd tergites with complete median longitudinal carina and a pair of oblique grooves (fig. 1D). Ovipositor as long as abdomen.

**Male.** None examined.

**Materials examined.** [YNU] South Korea: 1 female, GG, Gapyeong-gun Oeseo-myeon Cheongpyeongdaem, 14.vi.1992, J.W. Lee; 1 female, GN, Miryang-si Muan-myeon Jungsan-ri, 7.ix.2002, J.W. Lee; 2 females, GW, Hongcheon-gun Bukbang-myeon Gwangwon Prov. Environment Research Park, 29.vi.-16.vii.2012, S.J. Jang.

**Host.** *A. bipunctoria* usually attack lepidopteran larvae (see the Yu et al., 2012), sometimes coleopteran larvae (Attelabidae, Cerambycidae, Curculionidae) (Yu et al., 2012).

**Distribution.** South Korea, China (Heilongjiang, Jilin, Liaoning,

Xinjiang), Japan, Mongolia, Europe, Turkey.

***Apophua cicatricosa* (Ratzeburg, 1848) 점박이납작맴시벌 (신칭) (Figs 2A-D)**

*Glypta cicatricosa* Ratzeburg, 1848: 111. Type: lost.

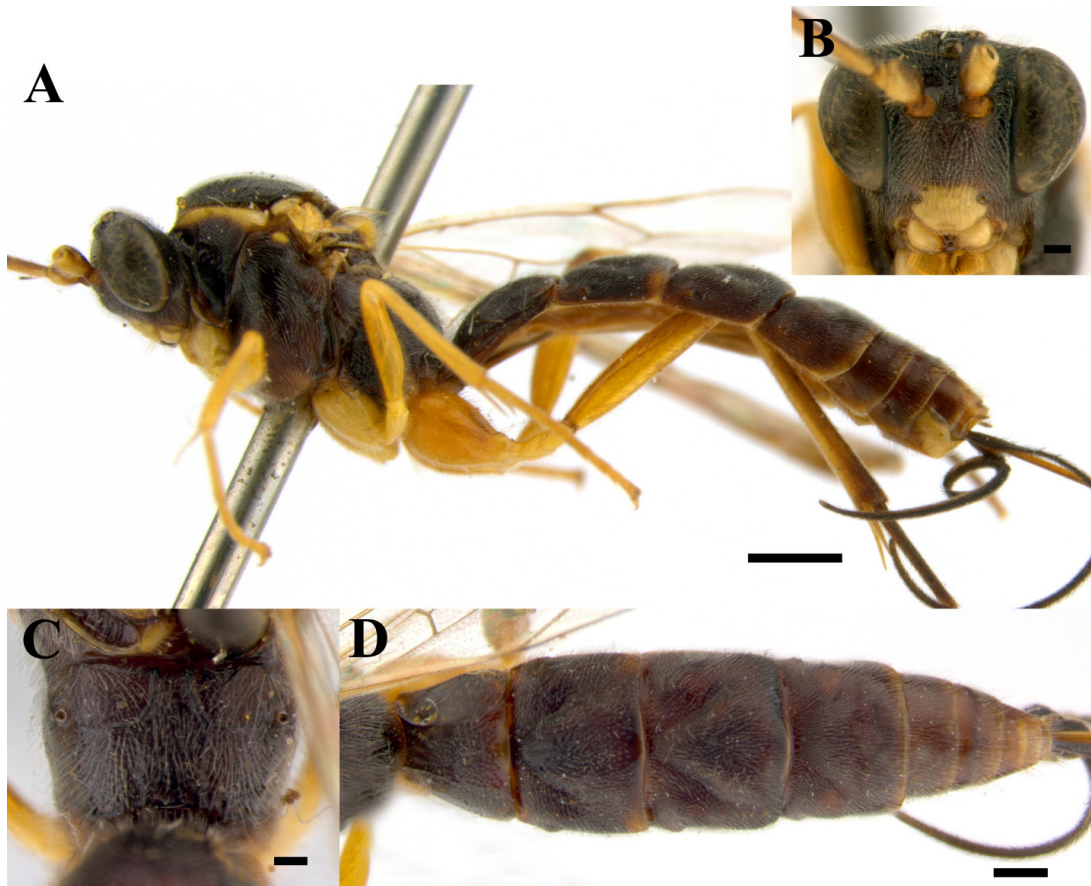
*Glypta crenulata* Thomson, 1889: 1325. Lectotype: male, TL: France, TD: ZI.

*Glypta crenulata rufoclypeata* Constantineanu & Pisica, 1960: 280. Type: male, TL: Romania, TD: unknown.

**Diagnosis. Female.** Body length. 8.8 mm. Fore wing 6.0 mm.

**Color.** Blackish brown. Antenna brown to yellow. Scape yellow (fig. 2B). Upper margin of pronotum yellow (fig. 2A). Scutellum yellow with brown triangular mark. Hind coxa orange with pale brown spot at dorsal part. Femur orange with black apical part. Tarsal claw brown with black apical part. Abdomen brown. All tergites without yellow line.

Malar space about as long as basal mandibular width. Antenna with 43 flagellomeres. 1st flagellomere 1.5 times as long as



**Fig. 2.** *Apophua cicatricosa*. (A) Habitus in lateral view, (B) Head in frontal view, (C) Propodeum, (D) Abdomen in dorsal view. Scale bars: 1 mm for A; 0.5 mm for D; 0.2 mm for B, C.

2nd flagellomere. Lateromedian longitudinal carina of propodeum distinct at anterior half (fig. 2C). Hind wing with 10 hamuli. Apical part of 1st tergite 1.3 times as wide as basal part, its median dorsal carina complete except posterior part, median longitudinal carina absent. 2nd-4th tergites without complete median longitudinal carina and with a pair of oblique groove (fig. 2D). Ovipositor shorter than abdomen.

**Male.** None examined.

**Material examined.** [YNU] South Korea: 1 female, GG, Paju-si Gwangtan-myeon Yeongjang-ri Bogwangsa, 8.vi.1986, H.H. Lee.

**Host.** Unknown.

**Distribution.** South Korea (New record), Japan.

**Remark.** *Apophua cicatricosa* is easily distinguished from other South Korean species by reddish brown abdomen.

*Apophua evanescens* (Ratzeburg, 1848) 운문점박이납작맴시벌 (신칭) (Figs 3A-D)

*Glypta evanescens* Ratzeburg, 1848: 103. Type: lost.

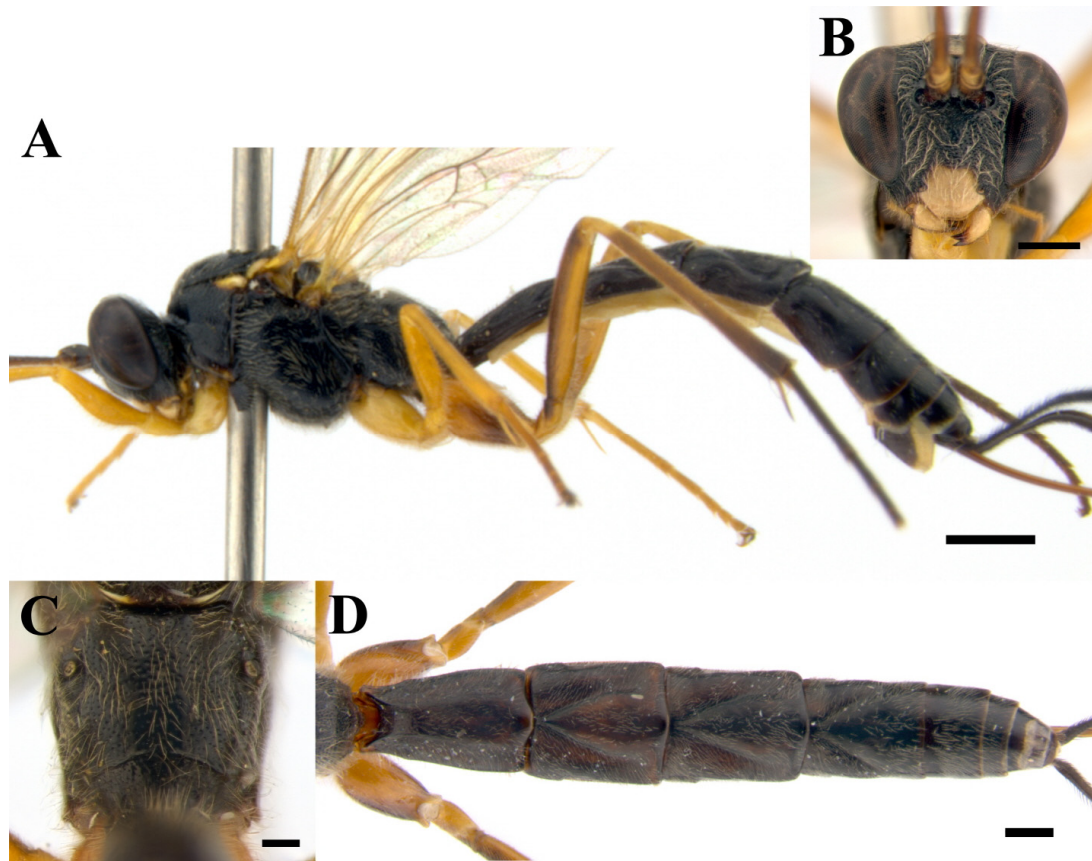
*Glypta albifrons* Holmgren, 1856: 104. Type: female, TL: Sweden, TD: unknown.

*Glypta sapporensis* Uchida, 1928: 74. Type: female, TL: Japan, TD: HU.

**Diagnosis. Female.** Body length. 8.5-10.5 mm. Fore wing 5.5-8.0 mm.

**Color.** Black. Antenna brown. Scape blackish brown (fig. 3B). Scutellum entirely yellow with anterior brown spot. Dorsoposterior part of pronotum with yellow spot (fig. 3A). Hind coxa and femur orange with brown lateral part. Tibia blackish brown with yellow basal part. Abdomen black. 5th-7th tergites tinged yellowish white.

Malar space about 0.7 times as long as basal mandibular



**Fig. 3.** *Apophua evanescens*. (A) Habitus in lateral view, (B) Head in frontal view, (C) Propodeum, (D) Abdomen in dorsal view. Scale bars: 1 mm for A; 0.5 mm for B, D; 0.2 mm for C.

width. Antenna with 46 flagellomeres. 1st flagellomere 1.9 times as long as 2nd flagellomere. Epicnemial carina present with incomplete lateral. Propodeum with only posterior transverse carina (fig. 3C). Hind wing with nine hamuli. Apical part of 1st tergite 1.7 times as wide as basal part, its median dorsal carina present more than half, median longitudinal carina absent. 2nd-3rd tergites with median longitudinal carina only at basal part. 2nd-4th tergites with a pair of oblique grooves (fig. 3D). Ovipositor shorter than abdomen.

**Male.** Similar to female.

**Materials examined.** Lectotype: [HU] Japan: 1 female, Maruyama, 13.vii.1913, T. Uchida. [YNU] South Korea: 2 females, CN, Seosan-si Haemi-myeon Daedok-ri Hanseo Univ., 16.vii.-3.viii.2013, J.K. Kim; 1 female, GB, Cheongdo-gun Unmun-myeon Sariamjuchajang, 13.x.-10.xi.2012, J.W. Lee; 1 male, GB, Pohang-si Buk-gu Jukjang-myeon Haok-ri, J.O. Lim 5.vi.2004; 1 male, GB, Yecheon-gun Bomun-myeon Mt.

Hakgasan, 6.ix.1998, J.W. Lee; 1 female, GG, Gapyeong-gun Cheongpyeong-myeon Mt. Homyeongsan Goseong, 18.viii.-4.ix.2009, J.O. Lim; 1 male, GG, Namyangju-si Pyeongnae-dong Mt. Cheonmasan, 18.vi.1983, J.W. Lee; 1 male, GG, Pyeongtaek-si Jangdang-dong Jangdanggol, 11.viii.-8.xi.2001, J.W. Lee; 1 male, GG, Yangpyeong-gun Yongmun-myeon Sinjeom-ri Mt. Yongmunsan, 11.vi.-25.vi.2009, J.O. Lim; ; 1 female, GN, Sancheong-gun Sicheon-myeon Gyeongsangnamdo Env. Tra. Ins., 3.x.1989, J.W. Lee; 1 female, GW, Jeongseon-gun Sindong-eup Bangje-ri Duwibong, 2.ix.2000, J.W. Lee; 1 male, GW, Wonju-si Heungeop-myeon Maeji-ri Yonsei univ, 6.vi.-28.vi.2011, J.W. Lee; 1 female, JB, Jeongeup-si Naejang-dong Ansam, 19.v.2004, J.W. Lee.

**Host.** *A. evanescens* attack lepidopteran larvae (Noctuidae, Tortricidae, Zygaenidae) (Yu et al., 2012).

**Distribution.** South Korea (New record), China (Henan), Japan, Russia (Amur Oblast, Buryatskaya Respublika, Chita Oblast, Khabarovsk Krai, Primorsky Krai, Pskov Oblast,

Sakhalin Oblast, Sankt Petersburg, Yaroslavl Oblast), Europe, India, Pakistan.

*Apophua honmai* Momoi, 1978 지리점박이납작맴시벌 (신칭)  
(Figs 4A-D)

*Apophua honmai* Momoi, 1978: 11. Type: female, TL: Japan, TD: MOMOI.

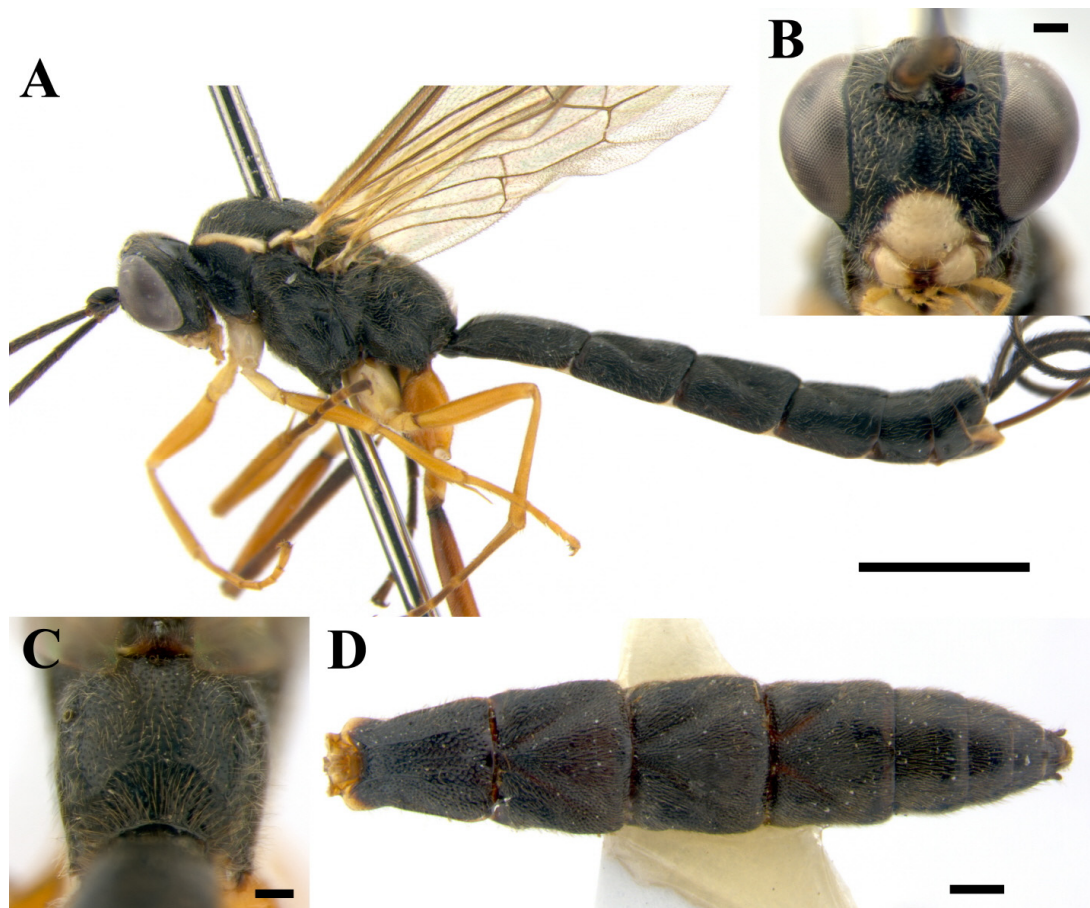
**Diagnosis. Female.** Body length. 7.8-11.0 mm. Fore wing 6.5-9.0 mm.

**Color.** Black. Antenna black at basal part to brown at apical part. Scape black (fig. 4B). Upper margin of pronotum yellow (fig. 4A). Scutellum yellow with black anterior triangular mark. Hind coxa orange. Femur orange with black apical and basal part. Tibia yellowish black at ventral part, its dorsal part blackish brown with yellow basal part. Tarsus and Tarsal claw blackish brown. Abdomen black. All tergites without yellow lines.

Malar space about as long as basal mandibular width. Antenna with 49 flagellomeres. Propodeum with only posterior transverse carina (fig. 4C). Hind wing with nine hamuli. Apical part of 1st tergite 1.5 times as wide as basal part, its median dorsal carina present at anterior half, median longitudinal carina present at posterior half. 2nd tergite with median longitudinal carina at anterior half. 3th tergite with median longitudinal carina at basal part (fig. 4D). 2nd-3rd tergites with a pair of oblique groove. Ovipositor shorter than abdomen.

**Male.** Similar to female. Antenna with 47 flagellomeres.

**Materials examined.** [YNU] South Korea: 1 female, CB, Jecheon-si Hansu-myeon Songgye-ri Mt. Weolagsan, 20.vi.-23.vi. 2003, J.O. Lim; 1 male, GW, Donghae-si Bukpyeong-dong Samhwasa, 27.vi.1984, H.S. Choi; 1 female, JB, Namwon-si Jucheon-myeon Mt. Jirisan Jeongryeongchi, 18.vii.-3.viii.2001, J.W. Lee.



**Fig. 4.** *Apophua honmai*. (A) Habitus in lateral view, (B) Head in frontal view, (C) Propodeum, (D) Abdomen in dorsal view. Scale bars: 2 mm for A; 0.5mm for D; 0.2 mm for B, C.

**Host.** *A. honmai* is known to be a parasitoid of larva of *Pandemis heparana* (Tortricidae) by Momoi (1978).

**Distribution.** South Korea (New record), Japan.

*Apophua stena* (Momoi, 1963) 방대점박이납작맷시벌 (신칭)  
(Figs 5A-D)

*Glypta stenus* Momoi, 1963: 107. Type: female, TL: Japan, TD: HU.

**Diagnosis. Female.** Body length. 8.0-10.0 mm. Fore wing 5.5-7.0 mm.

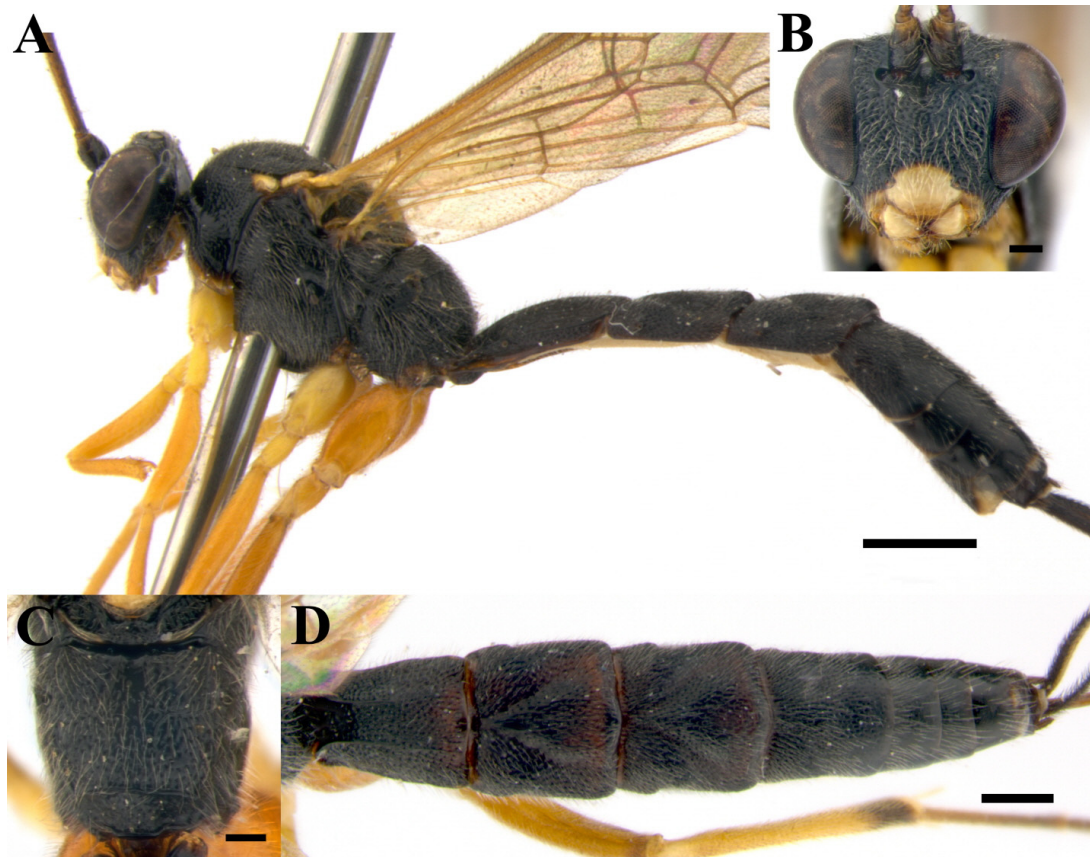
**Color.** Black. Antenna brown basal to yellow subapical part, its apical part blackish brown. Scape black (fig. 5B). Dorsoposterior part of pronotum with yellow spot (fig. 5A). Hind coxa and femur brown. Tibia yellow with black apical part. Tarsus brown except for black last segment. Tarsal claw black. All tergites without yellow line.

Malar space about 1.5 times as long as basal mandibular

width. Antenna with 48 flagellomeres. Epicnemial carina present laterally. Lateromedian longitudinal carina of propodeum present at anterior half (fig. 5C). Hind wing with eight hamuli. Apical part of 1st tergite 1.5 times as wide as basal part, its median dorsal carina visible more than half, median longitudinal carina absent (fig. 5D). 2nd-3rd tergites with median longitudinal carina at only basal part and a pair of oblique grooves. Ovipositor as long as abdomen.

**Male.** Similar to female. Flagellum with 42-44 segments.

**Materials examined.** Holotype: [HU] Japan: 1 female, Kushiro in Hokkaido, 19.xii.1929, M. Yamanaka. [YNU] South Korea: 1 female 1 male, GB, Pohang-si Buk-gu Jukjang-myeon Haok-ri, 2.ix.2004, J.O. Lim; 1 male, GG, Gapyeong-gun Buk-myeon Mt. Myeongjisan Gwimok Gwimokgogae, 4.ix.1999, S.M. Ryu; 1 male, GG, Namyangju-si Sudong-myeon Bigeum-ri, 13.ix.1980, H.K. Park; 1 male, GG, Namyangju-si Sudong-myeon Mt. Chungnyeongsan, 6.ix.1980, J.I. Kim; 1 male, GW, Inje-gun



**Fig. 5.** *Apophua stena*. (A) Habitus in lateral view, (B) Head in frontal view, (C) Propodeum, (D) Abdomen in dorsal view. Scale bars: 1 mm for A; 0.5mm for D; 0.2 mm for B, C.



Misan-ri Hanni-dong Mt. Bangdaesan, 24.vi.1996, J.W. Lee; 1 male, GW, Wonju-si Heungeop-myeon Maeji-ri Yonsei Univ. Wonju campus, 2.ix.-20.x.2009, H.Y. Han.

**Host.** Unknown.

**Distribution.** South Korea (New record), China (Liaoning), Japan, Russia (Khabarovsk Krai, Primorsky Krai, Sakhalin Oblast).

***Apophua sugaharai* Momoi, 1978 스가하라점박이납작뱀시벌 (신칭) (Figs 6A-D)**

*Apophua sugaharai* Momoi, 1978: 9. Type: female, TL: Japan, TD: MOMOI.

**Diagnosis. Female.** Body length. 11 mm. Fore wing 7.2 mm.

**Color.** Black. Antenna brown, its apical half broken. Dorsal part of scape black with yellow ventral part (fig. 6B). Upper margin of pronotum yellow (fig. 6A). Hind coxa brownish yellow. Femur brown. Tibia blackish brown with yellow basal

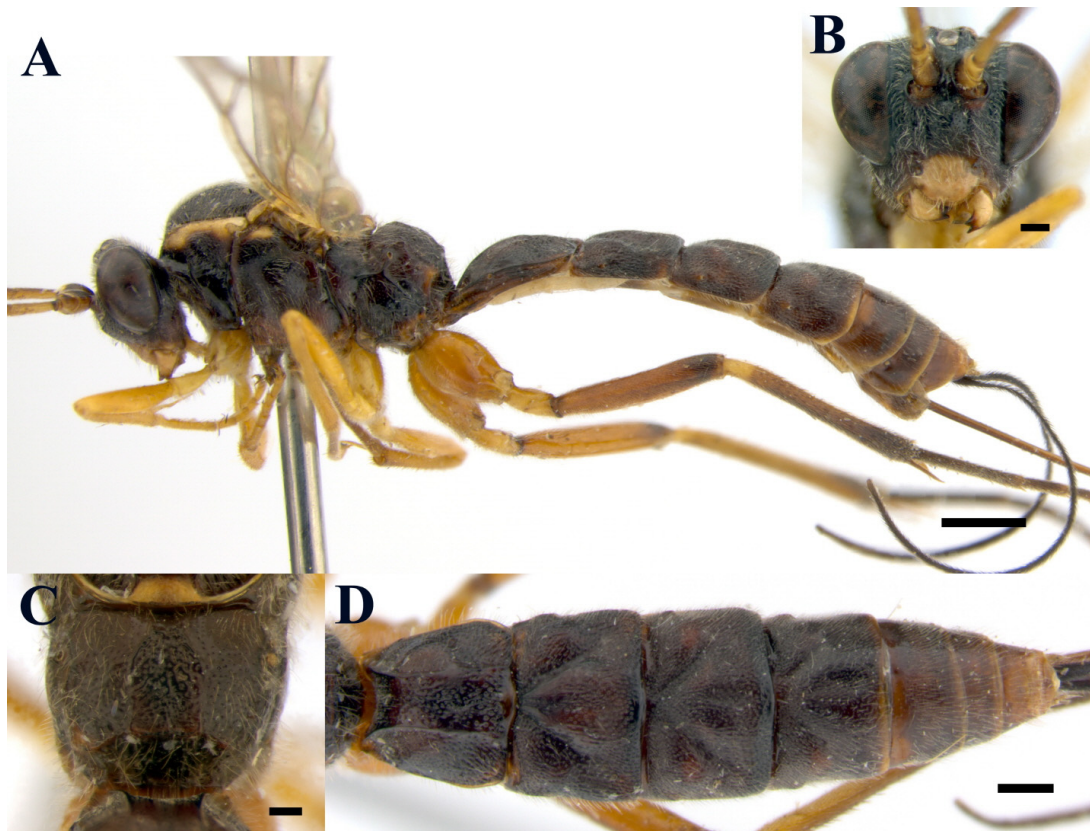
part. Tarsus and Tarsal claw black. Abdomen reddish brown. 4th tergite and following tergites with yellow apical part.

Malar space about 0.7 times as long as basal mandibular width. Antenna with 14 flagellomeres (broken). Epicnemial carina present laterally. Lateromedian longitudinal carina of propodeum present incompletely (fig. 6C). Hind wing with nine hamuli. Apical part of 1st tergite 1.3 times as wide as basal part, its median dorsal carina visible to apical part, median longitudinal carina absent (fig. 6D). 2nd-3rd tergites with a pair of oblique grooves. All tergites without median longitudinal carina Ovipositor as long as abdomen.

**Male.** None examined.

**Material examined.** [YNU] South Korea: 1 female, GB, Pohang-si Buk-gu Cheongha-myeon Yugye-ri, 23.vi.2004.

**Host.** *A. sugaharai* is known to be a parasitoid of larvae of *Pandemis heparana*, *Ptycholoma lecheana* (Tortricidae) by Momoi (1978).



**Fig. 6.** *Apophua sugaharai*. (A) Habitus in lateral view, (B) Head in frontal view, (C) Propodeum, (D) Abdomen in dorsal view. Scale bars: 1 mm for A, B, C; 0.5 mm for D.

**Distribution.** South Korea (New record), Japan.

***Apophua tobensis* (Uchida, 1928) 무릉점박이납작맷시벌 (신칭) (Figs 7A-D)**

*Glypta bipunctoria* var. *tobensis* Uchida, 1928: 75. Type: female, TL: Japan, TD: HU.

*Glypta bipunctoria* Momoi, 1963: 26. Type: female, TL: Sweden, TD: UU.

**Diagnosis. Female.** Body length. 9.5-10.3 mm. Fore wing 7.5-8.5 mm.

**Color.** Black. Antenna gradate black basal to blackish brown apical part. Scape black with yellow inner part (fig. 7B). Upper margin of pronotum yellow (fig. 7B). Dorsoanterior corner of mesopleuron with small yellow mark. Hind coxa black with brown dorsal part. Trochanter and trochantellus brown. Femur black. Tibia black with yellow basal part. Tarsus and tarsal claw black. Abdomen black. All tergites without yellow line.

Malar space about as long as basal mandibular width. Antenna with 49 flagellomeres. Hind rim of metanotum with a

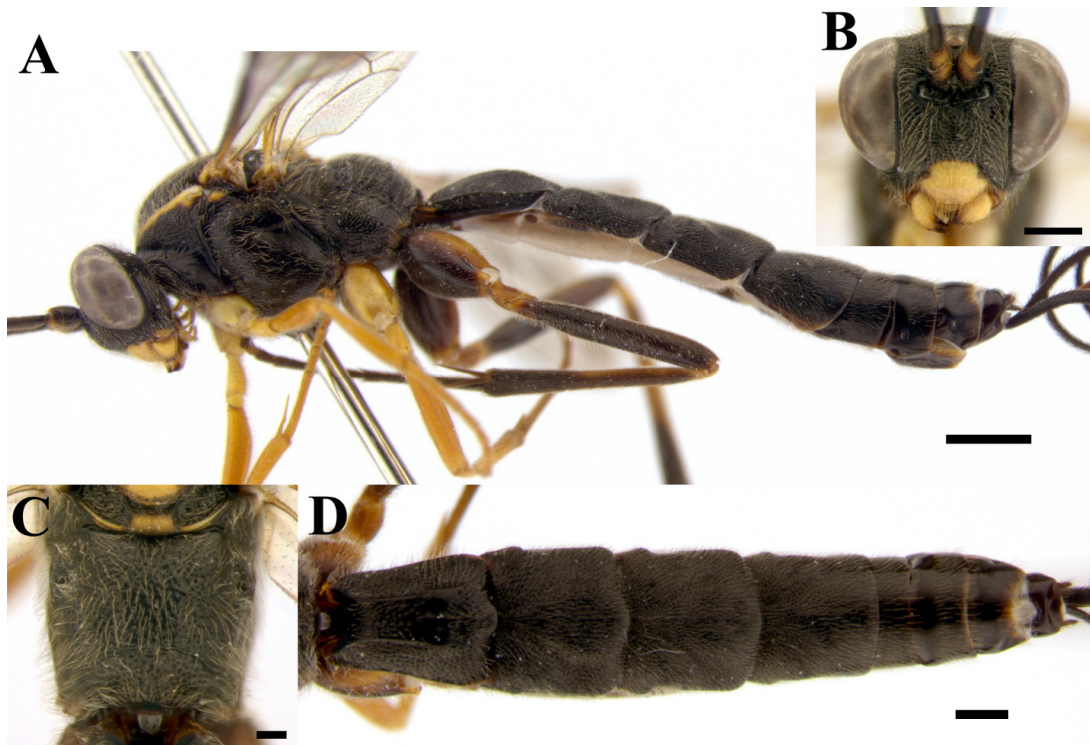
rather large sublateral triangular projection. Epicnemial carina present laterally. Lateromedian longitudinal carina of propodeum weakly present at anterior half (fig. 7C). Costula visible. Hind wing with nine hamuli. Apical part of 1st tergite 1.4 times as wide as basal part, its median dorsal carina complete except posterior part, median longitudinal carina visible at posterior half, its middle part polished without puncture (fig. 7D). 2nd-3rd tergites with median longitudinal carina at anterior half and a pair of oblique groove. Ovipositor distinctly shorter than abdomen.

**Male.** Similar to female. Antenna with 46 flagellomeres.

**Materials examined.** Lectotype: [HU] Japan: 1 female, Toba, 22.vi.1922, Yanagiwara. [YNU] South Korea: 1 female, GN, Hadong-gun Agyang-myeon Deungchon-ri (Hyeongjebong), 26.viii.-27.viii.2002, T.H. In; 1 male, GW, Donghae-si Samhwadong Mureunggyegok, 21.vii.-5.viii.2007, J.W. Lee.

**Host.** *A. tobensis* usually attack larvae of Tortricidae. (Kamijo, 1973; Momoi, 1965).

**Distribution.** South Korea (New record), Japan, Russia (Primorsky Krai).



**Fig. 7.** *Apophua tobensis*. (A) Habitus in lateral view, (B) Head in frontal view, (C) Propodeum, (D) Abdomen in dorsal view. Scale bars: 1 mm for A; 0.5 mm for B, D; 0.2 mm for C.

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