

# Six new Records of *Exetastes* (Ichneumonidae: Banchinae) from South Korea

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## 한국산 어리몽톡맵시벌속 (맵시벌과, 가시몽톡맵시벌아과)의 6미기록종에 관한 보고

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**ABSTRACT:** A taxonomic study was carried out to discover unrecorded species of South Korean *Exetastes* of which six taxa were previously known. In the present study, another six taxa were newly recognized from the country: *E. adpressorius*, *E. allopus*, *E. fukuchiyamanus*, *E. illyricus*, *E. saponensis* and *E. tomentosus*. With the result of this study, 11 species and one subspecies in *Exetastes* are in total known from South Korea. In addition, a key to the South Korean species and the diagnoses and digital images of the six newly recorded species are provided.

**Key words:** Banchini, Parasitic wasps, Ichneumonid wasp, Key, Taxonomy

**초록:** 본 연구 결과에서는 국내에 5종 1아종만이 알려져 있던 어리몽톡맵시벌속에 6종을 추가했다. 이를 통해 국내 어리몽톡맵시벌속은 총 11종 1아종으로 정리되었으며 본 논문에서는 한국산 어리몽톡맵시벌속의 분류를 위한 검색표 및 미기록종들의 진단형질과 이미지를 제공했다.

**검색어:** 가시몽톡맵시벌속, 기생 성벌, 맵시벌, 검색표, 분류.

*Exetastes* Gravenhorst, 1829 is a largest cosmopolitan group with 148 existing and two fossil species (*E. inveteratus* and *E. manchuricus*) in Banchini. Among them, 48 species were reported from the Eastern Palearctic Region whereas only six taxa were reported from the Korean Peninsula: *E. albiger albiger*, *E. fornicator fornicator*, *E. fornicator miniatus*, *E. ichneumoniformis*, *E. ishikawensis murayamai* and *E. komarovi* (Yu et al., 2016). This genus can be easily distinguished from other genera of Banchini by having prepectal carina and a mandible with a pointed upper tooth. The species of the genus are known as koinobiont endoparasitoids of lepidopteran

larvae, especially Noctuidae (Yu et al., 2016).

The taxonomic study on Korean *Exetastes* was started by Kokujev (1904) with a record of two new species (*Exetastes komarovi* and *E. coreanus* (= *E. komarovi*)) that were collected from adjacent areas of Yalu river (the Amnokgang, North Korea). After then, Uchida (1929) reports two new species, *Exetastes murayamai* (= *E. ishikawensis murayamai*) and *E. murayamai keijoensis* (= *E. ishikawensis murayamai*), with specimens from Seoul, South Korea. The subspecies name of the latter one, 'keijoensis', was based on a Japanese word for 'Seoul' as the type locality. In 1955, *Exetastes miniatus* (= *Exetastes fornicator miniatus*) and *Exetastes ichneumoniformis* were newly reported by Kim (1955). At the same time, Uchida (1955) published a list of species collected by Dr. K. Tsuneki

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in Korea, and reported two new species (*Exetastes chosensis* (= *Exetastes fornicator miniatus*) and *Exetastes tsunekii* (= *Exetastes ichneumoniformis*)) and an unrecorded species (*Exetastes ichneumoniformis*).

The aim of the present study is to report six additional species in *Exetastes* that are new to Korean insect fauna: *E. adpressorius*, *E. allopus*, *E. fukuchiyamanus*, *E. illyricus*, *E. sapporensis* and *E. tomentosus*. The digital images and diagnoses of the newly recognized species are provided with international distribution records, and a key to South Korean species of *Exetastes* is also given.

## Material and Methods

The wasp specimens of the present study were collected by sweeping and by Malaise traps and deposited in the Georim Entomological Institute (Daegu, South Korea). Distributional data follow Yu et al. (2016).

The abbreviations for South Korean provinces are as follows: **CB**, Chungcheongbuk-do; **CN**, Chunagcheongnam-do; **GB**, Gyeongsangbuk-do; **GG**, Gyeonggi-do; **GW**, Gangwon-do; **GN**, Gyeongsangnam-do; **JB**, Jeollabuk-do. Other acronyms and abbreviations used in the text are as follows: **HU**: Hokkaido University, Faculty of Agriculture, Entomological Institute, Sapporo, Japan; **IZU**: Instytut Zoologiczny Uniwersytetu, Wrocław, Poland (Gravenhorst collection.); **MZ**: Musée Zoologique, Lausanne, Switzerland; **TMA**: Termesztudományi Múzeum Allattara, Budapest, Hungary; **UU**: Uppsala Universitet, Zoologiska Institutionen, Entomologiska Avdelningen, Uppsala, Sweden (Thunberg collection.); **UZM**: Universitets Zoologiske Museum, Copenhagen, Denmark; **ZI**: Zoologiska Institutionen, Lund, Sweden; **ZMHU**: Zoologisches Museum (Museum für Naturkunde), Humboldt-Universität, Berlin, Germany; **ZS**: Zoologisches Staatsammlung, München, Germany; **TD**, Type depository; **TL**, Type locality; **TS**, Type species.

The images were taken 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). Morphological terminology is as per the

American Entomological Institute website (<http://www.amentinst.org/GIN/morphology.php>).

### Order Hymenoptera 벌목

#### Family Ichneumonidae 맵시벌과

##### Subfamily Banchinae Wesmael, 1845 가시몽톡맵시벌아과

##### Genus *Exetastes* Gravenhorst, 1829 어리몽톡맵시벌속

*Exetastes* Gravenhorst, 1829: 395. TS: *Ichneumon fornicator* Fabricius.

*Leptobatus* Gravenhorst, 1829: 432. TS: *Leptobatus ziegleri* Gravenhorst.

*Rhimphalea* Förster, 1869: 202. TS: *Rhimphalea brevicorpa* Davis.

*Semnophrys* Förster, 1869: 158. TS: *Exetastes notatus* Holmgren.

*Icyona* Cameron, 1903: 340. TS: *Icyona rufipes* Cameron.

*Allzetastes* Kokujev, 1904: 106. TS: *Exetastes komarovi* Kokujev.

*Rhynchzetastes* Cameron, 1906: 102. TS: *Rhynchzetastes violaceipennis* Cameron.

*Tegona* Morley, 1913: 251. TS: *Tegona rufipes* Morley.

*Pseudzetastes* Meyer, 1927: 308. TS: *Pseudzetastes diakonovi* Meyer.

## Key to Species of *Exetastes* from South Korea

1. Upper margin of face with a small median tubercle. .... 2
  - Upper margin of face without a median tubercle. .... 6
2. Metasoma entirely black with reddish brown second to third tergites. .... 3
  - Metasoma entirely black or entirely dark brown with white band apically. .... 5
3. Fore and mid legs entirely black with yellow basal and apical each segment (except black coxae), tibia black with yellow apically. Scutellum slightly convex. ....
  - ..... *E. ishikawensis murayamai*
  - Fore and mid leg entirely yellow with black coxae. Scutellum strongly convex. .... 4
4. Propodeum very stout, with dense, coarse and very close punctures. Wings strongly infusate. Mesoscutum entirely black. .... *E. ichneumoniformis*

- Propodeum stout, with small dense punctures. Wings hyaline. Mesoscutum with a pair of yellow spots anteriorly on both sides. .... *E. adpressorius*
- 5. Mesoscutum with a pair of very small yellow spots anteriorly on both sides. .... *E. tomentosus*
- Mesoscutum entirely black. .... *E. komarovi*
- 6. Frons with a median tubercle between of both antennal sockets. .... 7
- Frons without a median tubercle. .... 8
- 7. Metasoma entirely black. .... *E. fornicator fornicator*
- Metasoma reddish brown with black apically. ....  
..... *E. fornicator miniatus*
- 8. Metasoma entirely black. .... 9
- Metasoma entirely black with white band apically. .... 11
- 9. Antenna with less than 50 flagellomeres. First tergite less than 3.0 times as long as apical width. .... 10
- Antenna with more than 60 flagellomeres. First tergite 3.6 times as long as apical width. Second tergite 0.8 times as long as apical width. .... *E. allopus*
- 10. Scutellum with a yellow spot medially. Hind leg black with yellow ring at tarsus. .... *E. fukuchiyamanus*
- Scutellum entirely black. Hind leg black except reddish brown femur with apical area black. .. *E. albiger albiger*
- 11. Fore and mid legs entirely yellow with black coxae and brown tibia. Antenna black with a white band medially. .... *E. illyricus*
- Fore and mid legs entirely dark brown with black coxae. Antenna black with yellowish brown apical and a white median band. .... *E. sapporensis*

*Exetastes adpressorius* (Thunberg, 1822) 붉은배어리몽톡맵시벌 (신칭) (Fig. 1A–C)

*Ichneumon adpressorius* Thunberg, 1822: 254. Lectotype: female, TL: Sweden, TD: UU.

*Exetastes guttatorius* Gravenhorst, 1829: 411. Type: unknown.

*Exetastes tristis* Gravenhorst, 1829: 409. Type: female, TL: Italy, TD: unknown.

*Exetastes guttatorius procera* Kriechbaumer from Schletterer, 1894: 36. Type: unknown. Infrspecific name.

*Exetastes guttifer* Thomson, 1897: 2418. Lectotype: female, TL: Sweden, TD: ZI.

*Exetastes medianus* Szépligeti, 1898: 30. Lectotype: female, TL: Czechoslovakia, TD: TMA.

*Exetastes adpressorius albopictus* Aubert, 1959: 153. Type: unknown.

*Exetastes adpressorius nigratarsis* Constantineanu and Pisica, 1960: 55. Type: female, TL: Romania, TD: unknown. Infrspecific name.

*Exetastes albopictor* Aubert, 1972: 86. Type: male, TL: France, TD: MZ.

**Diagnosis.** Face weakly convex, densely punctate; near upper margin with a very small median tubercle; 0.6 times as long as wide (Fig. 1B). Malar space about 0.6 times as long as basal mandibular width. Antenna with 56 flagellomeres; first flagellomere 1.8 times as long as second flagellomere. Mesosoma with dense and short yellow hairs. Pronotum broad with transversely fused punctures only upper part; epomia developed. Propodeum rather stout; polished with punctures, not tending to rugose partly with long and dense hairs (Fig. 1C). Ratio of hind tarsomeres are 5.5: 2.5: 1.7: 1.0: 1.5. Fore wing with very shortly petiolate large rhombic areolet. Hind wing with 12 hamuli. Metasoma polished with shallow and dense punctures. First tergite 2.1 times as long as apical width and without lateral longitudinal carina. Second tergite polished and rectangular, as long as apical width. Ovipositor sheath 0.3 times as long as hind tibia.

**Color.** Black with reddish metasoma (Fig. 1A). Clypeus with brown apical half. Antenna black with brown sub-basally with white median band. Upper posterior corner of pronotum yellow. Tegula yellow. Upper part of mesopleuron with a small yellow spot. Mesoscutum with a pair of yellow oval mark anteriorly on both sides. Scutellum entirely yellow. Fore and mid legs yellow with black coxae and trochanters. Hind coxa and trochanters black; femur dark brown with brown basally; tibia yellowish brown with brown apically and yellow dense hairs; tarsus yellow; tarsal claws brown. Metasoma black with reddish medially. First tergite black with reddish brown mark medially and apically. Second to fourth tergites entirely reddish brown. Following tergites with each white apical margin.

**Specimens examined:** [South Korea] [GG] Namyangju-si, Pyeongnae-dong, 1 female, 19.v.1983, J.W. Lee; Paju-si Aeng-

mubong, 1 female & 1 male, 9.v.1971, G.W. Seo and Y.H. Lee; Paju-si Mt. Gamaksan, 1 female, 24.viii.1967, J.I. Kim; Pocheon-si, Mt. Wangbangsan, 1 female, 23.v.1996, J.W. Lee; Yangpyeong-gun, Yongmun-myeon, Mt. Yongmunsan, 1 female, 29.v.1982, S.H. Sim; [CB] Danyang-gun, Mt. Sobaeksan, 1 male, 25.v.1997, S.M. Ryu; Jecheon-si, Mt. Woraksan, 1 female, 17.v.1991, W.H. Lee; [CN] Cheongyang-gun, Mt. Chilgqpsan, 1 male, 26.v.1990, I.E. Choi; [Seoul] Dobong-gu, Mt. Bukhansan, 1 male, 18.v.1985, J.Y. Kim; Dobong-gu, Mt.

Dobongsan, 1 female, 29.v.1987, S.Y. Kim; Mt. Bukhansan, 1 female, 18.v.1986, S.S. L; Mt. Cheonggyesan, 1 female, 7.vi.1986, J.H. Park; ditto, 1 female, 2.vii.1986, Y.B. Han; Mt. Suraksan, 2 females, 27.v.1986, J.Y. Kim; Nowon-gu, Hagye-dong, 1 female, 13.v.1998, H.J. Lee; Nowon-gu, Mt. Bulamsan, 1 male, 25.v.1977, S.Y. Nam; Seocho-gu, Mt. Cheonggyesan, 1 male, 2.vi.1991, E.K. Choi; Seocho-gu, Mt. Gwanaksan, 1 male, 12.v.1990, S.Y. Choi; [Daejeon] Dong-gu, Yongun-dong, 1 female, 12.v.1988, H.B. Park; ditto, 1 female, 4.v.1988,



**Fig. 1.** A-C *Exetastes adpressorius*; D-F *E. albiger albiger*. A, D: habitus in lateral view; B, E: head in frontal view; C, F: propodeum in dorsal view. Scale bars (A, D): 1.0 mm; (B, C, E, F): 0.2mm.

G.H. Kim; [Daegu] Mt. Daedeoksan, 1 female, 18.v.1996, J.S. Hwang; Nam-gu, Mt. Apsan, 1 female & 1 male, 18.v.1996, D.J. Yang and G.S. Seo; ditto, 1 male, 15.v.1996, J.W. Lee.

**Distribution:** South Korea (new record), China (Xinjiang), Russia (Sankt Petersburg, Tambov Oblast), Mongolia, Algeria, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Canary Islands, Croatia, Czech Republic, late Czechoslovakia, Finland, France, Germany, Hungary, Ireland, Italy, Jordan, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Tunisia, Turkey, Turkmenistan, U.K., Uzbekistan, late Yugoslavia.

*Exetastes allopus* Meyer, 1927 갈색무늬어리몽톡맵시벌 (신칭) (Fig. 1D–F)

*Exetastes allopus* Meyer, 1927: 300, 305. Type: male, TL: Russia (Amur Oblast), TD: ZI.

**Diagnosis.** Face slightly convex medially, densely and coarsely punctate; near upper margin without median tubercle; 0.5 times as long as wide (Fig. 1E). Frons smooth, flat with dense small punctures. Vertex coriaceous, sparsely punctured more than face. Malar space about 0.5 times as long as basal mandibular width. Antenna with 64 flagellomeres; first flagellomere 1.75 times as long as second flagellomere. Mesosoma with dense and long pubescence. Pronotum with dense punctures not fused; upper posterior margin hook-shaped. Scutellum, in profile, strongly convex, densely punctate. Propodeum elongated; closely punctured tending to rugose partly with long and dense hairs; median longitudinal carina present posteriorly, lateral longitudinal carina and posterior transverse carina complete (Fig. 1F). Ratio of hind tarsomeres are 5.5: 2.5: 1.8: 1.0: 1.3. Hind wing with eight hamuli. Metasoma with shallow and dense punctures. First tergite strongly elongated, 3.6 times as long as apical width without lateral longitudinal carina. Second tergite coriaceous, 0.8 times as long as apical width.

**Color.** Black with brownish metasoma and yellow spots (Fig. 1D). Facial orbit broadly yellow. Clypeus with yellow basal half. Mandible brown with yellow basally and black mandibular teeth. Antenna brown with median yellow band. Scutellum with yellow spot medially. Fore and mid legs yellow

with brown coxae and femora; tarsal claws brown. Hind coxa to basitarsus dark brown; following tarsus yellow; tarsal claw brown. Metasoma blackish brown.

**Specimens examined:** [South Korea] [GW] Hongchun-gun, Nae-myeon, Gachilbong, 1 male, 25.v.1996, M.S. Kim, K.H. Lee and H.W. Ryu; [GG] Yangpyeong-gun, Mt. Yongmunsan, 1 male, 27.ix.1986, E.K. Kim; [Seoul] Dobong-gu Mt. Dobongsan, 1 male, 20.ix.1992, H.G. Oh.

**Distribution:** South Korea (New record), Russia (Amur Oblast, Khabarovsk Krai, Primorsky Krai).

*Exetastes fukuchiyamanus* Uchida, 1928 검정어리몽톡맵시벌 (신칭) (Fig. 2A–C)

*Exetastes fukuchiyamanus* Uchida, 1928: 270. Type: female, TL: Japan, TD: HU.

**Diagnosis.** Face weakly convex medially, densely and coarsely punctate; near upper margin without median tubercle; 0.6 times as long as wide (Fig. 2B). Vertex sparsely punctured more than face. Malar space about 0.5 times as long as basal mandibular width. Inner orbits of compound eyes very weakly emarginated opposite antennal sockets. Antenna rather thick with 42 flagellomeres; first flagellomere 2.1 times as long as second flagellomere. Mesosoma with dense and short yellow hairs. Pronotum with transversely fused punctures from upper to medially; upper posterior margin semi hook-shaped. Propodeum stout, closely punctured tending to rugose partly with long and dense hairs; median longitudinal and lateral longitudinal carinae present; posterior transverse carina complete with coarse tubercle in posterior of both spiracle (Fig. 2C). Ratio of hind tarsomeres are 5.5:2.7:1.4:1.0:1.5. Hind wing with nine hamuli. Metasoma elongated with shallow and fine punctures. First tergite rectangular, 2.5 times as long as apical width without lateral longitudinal carina. Second tergite coriaceous, 1.1 times as long as apical width.

**Color.** Entirely black (Fig. 2A). Head black. Mandible dark brown with black mandibular teeth. Antenna black with white median band only inner side. Mesosoma black. Scutellum with yellow mark medially. Fore and mid leg dark brown. Hind leg black; second-fourth tarsal segments yellow with black basal

half of second tarsus. Wings hyaline. Metasoma black, partly brownish.

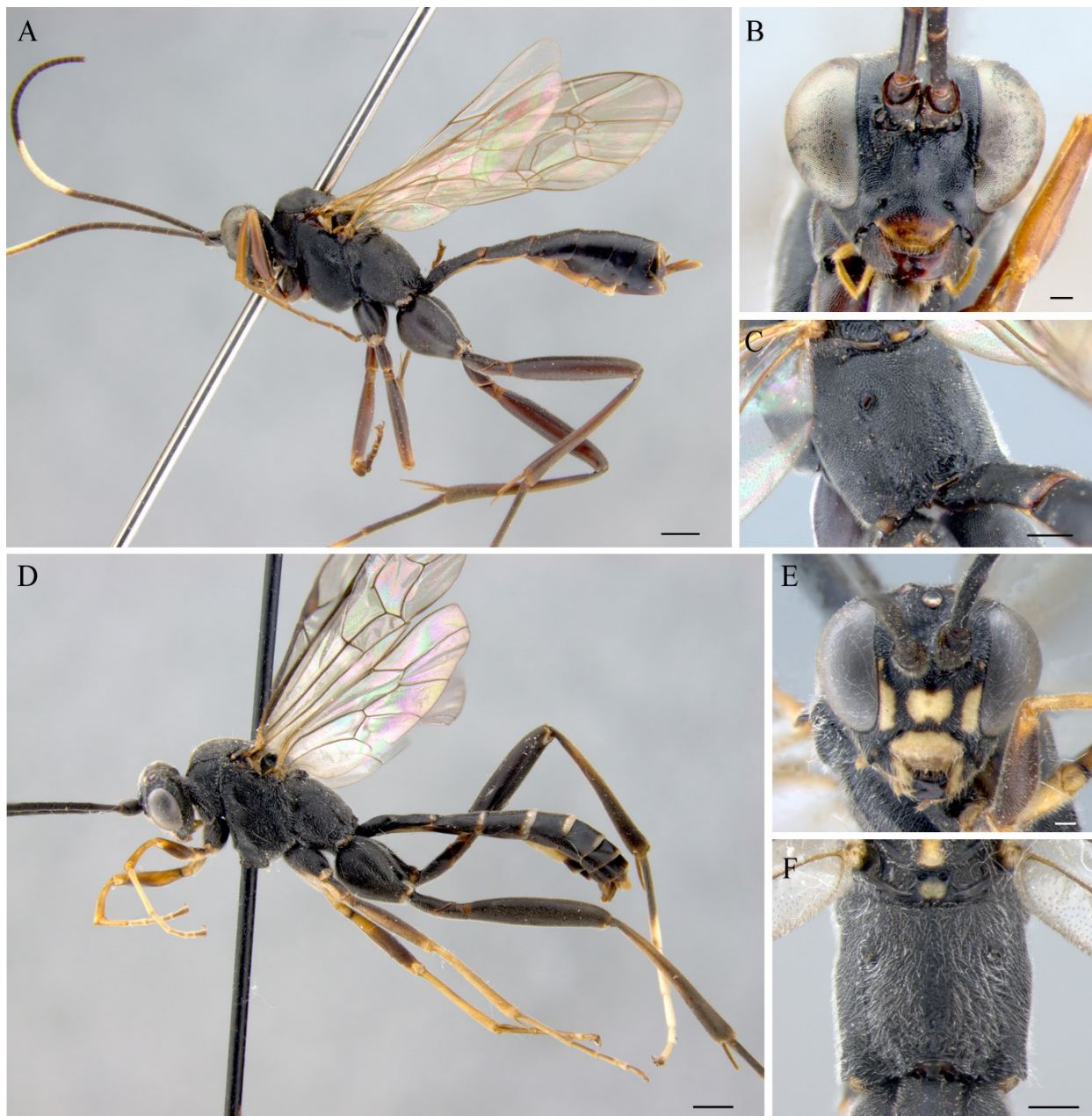
**Specimens examined:** [South Korea] [GG] Namyangju-si Mt. Cheonmasan, 1 female, 11.iv.1982, M.H. Young; Namyangju-si Palya-ri, 1 female, 10.ix.1980, C.H. Byun; Yongin-si Mt. Gwanggyosan, 1 female, 12.viii.1992, S.M. Lee.

**Distribution:** South Korea (New record), China (Liaoning),

Japan, Russia (Primorsky Krai).

*Exetastes illyricus* Strobl, 1904 흰띠어리뿔목맵시벌 (신칭) (Fig. 2D–F)

*Exetastes illyricus* Strobl 1904: 45. Type: ♀, TL: Austria, TD: unknown.



**Fig. 2.** A–C *Exetastes fukuchiyamanus*; D–F *E. illyricus*. A, D: habitus in lateral view; B, E: head in frontal view; C, F: propodeum in dorsal view. Scale bars (A, D): 1.0 mm; (B, E): 0.2mm; (C, F): 0.5mm.

**Diagnosis.** Face strongly convex, densely punctate; near upper margin without median tubercle; 0.7 times as long as wide (Fig. 2E). Frons convex with dense fine punctures. Temple polished with fine punctures. Malar space approximately as long as basal mandibular width. Antenna with 53 flagellomeres; all flagellomeres with long hairs apically; first flagellomere 1.8 times as long as second flagellomere. Mesosoma with dense and long white pubescence. Pronotum broad with transversely fused punctures from upper to ventroposterior corner; upper posterior margin hook-shaped. Scutellum, in profile, rather flat, densely punctate. Propodeum elongated; closely punctured tending to rugose medially with long and dense hairs (Fig. 2F). Ratio of hind tarsomeres are 7.0:3.5:2.5:1.0:2.0. Hind wing with 11 hamuli. Metasoma polished with shallow punctures. First tergite rectangular, 2.4 times as long as apical width without lateral longitudinal carina. Second tergite coriaceous, 1.4 times as long as apical width.

**Color.** Entirely black with white band (Fig. 2D). Face black with a pair of yellow linked spot; facial orbit broadly yellow. Clypeus entirely yellow. Mandible yellow with black basally and mandibular teeth. Antenna with white band medially. Scutellum with v-shaped yellow mark. Fore and mid legs tan yellow with black coxae; trochanters and femora dark brown with brown ventrally; tarsal claw brown. Hind coxa to femur black; tibia black with yellow sub-basally, with a lot of yellow hairs; tarsus yellow with black basal half of basitarsus; tarsal claw dark brown. All tergites with white band apically.

**Specimens examined:** [South Korea] [GB] Seongju-gun Gacheon-myeon Singye-ri Seokhangryeong, 1 male, 27.v.2016, JW Lee.

**Distribution:** South Korea (new record), Russia (Altayskiy Kray, Primorsky Kray), Austria, Belgium, Croatia, late Czechoslovakia, France, Germany, Latvia, Lithuania, Netherlands, Poland, Romania, late Yugoslavia.

*Exetastes sapporensis* Uchida, 1931 **삿포로어리뭉툭 맵시벌 (신칭)** (Fig. 3A–C)

*Exetastes sapporensis* Uchida, 1931: 49. Type: ♀, TL: Japan, TD: HU.

**Diagnosis.** Face flat, densely and coarsely punctate; near upper margin without median tubercle, 0.6 times as long as wide (Fig. 3B). Frons coriaceous, flat with dense and shallow small punctures. Vertex sparsely punctured more than face. Malar space about 0.5 times as long as basal mandibular width. Antenna with 54 flagellomeres; first flagellomere 1.8 times as long as second flagellomere. Mesosoma with dense and short white hairs. Pronotum with transversely fused punctures from upper to ventroposterior corner; upper posterior margin hook-shaped. Scutellum, in profile, slightly convex, densely punctate. Propodeum rather elongated; closely punctured tending to rugose partly with long and dense hairs (Fig. 3C). Ratio of hind tarsomeres are 6.0: 2.8: 2.0: 1.0: 1.3. Hind wing with 10 hamuli. Metasoma elongated and polished with shallow fine punctures. First tergite 2.5 times as long as apical width without lateral longitudinal carina. Second tergite coriaceous, 1.2 times as long as apical width.

**Color.** Black with yellow marks (Fig. 3A). Facial orbit yellow. Clypeus yellow. Mandible black with yellow spot dorsally. Antenna with bright apical and white median band. Tegula yellow. Mesopleuron with small yellow spot on upper part. Mesoscutum with a pair of elongated yellow spot anteriorly on both sides. Scutellum entirely yellow. Fore and mid legs yellow with black coxae and trochanters; femora and tarsal claws brown. Hind coxa to femur black; tibia brown with bright basally; tarsus yellow with brown 2/3 of basitarsus; tarsal claw brown. Metasoma with yellow each apical margin.

**Specimens examined:** [South Korea] [GW] Chuncheon-si, Mt. Bonguisan, 1 female, 6.vi.2003, Y.J. Kwon; Wonju-si, Heungeup-myeon, Maeji-ri, Yonsei Univ. Campus, 1 female & 1 male, 6-28.vi.2011, J.W. Lee; Wonju-si, Kyirae-myeon, from Chuneun Temple to Mt. Sibjabong, 1 male, 1.v.1999, M.K. Choi and H.J. Kwon; [GG] Dongducheon-si, Mt. Soyosan, 2 males, 31.v.1983, J.W. Lee; Gapyeong-gun, Cheongpyeong-myeon, Goseong-eup, Mt. Homyeongsan, 4 males, 1.v-26.v.2009, J.O. Lim; ditto, 1 female & 1 male, 27.v-10.vi.2009, J.O. Lim; Gwangju-gun, Namhansanseong, 1 male, 20.v.1998, S.H. Woo; Hanam-si, Namhansanseong, 1 female, 26.v.1996, M.S. Choi; ditto, 2 males, 6.vi.1996, H.J. Hong; ditto, 1 female & 6 males, 17.v.1997, H.H. Jo; ditto, 1 male, 18.v.1997, D.W. Jeong; Namyangju-si, Joan-myeon, Songchon-ri, Mt. Ungilsan, M.T(I)

Alt. 99m, 9 females & 6 males, 27.v-10.vi.2009, J.O. Lim; ditto, 6 females, 11-25.vi.2009, J.O. Lim; Namyangju-si, Joan-myeon, Songchon-ri, Mt. Ungilsan, M.T(II) Alt. 134m, 6 females & 3 males, 27.v-10.vi.2009, J.O. Lim; Namyangju-si Mt. Cheon-masan, 1 female & 2 males, 4.vi.1983, J.W. Lee; Namyangju-si, Palya-ri, 1 female & 1 male, 3.v.1986, Y.J. Park; Yangpyeong-gun, Yongmun-dong, Yeonsu-ri, Mt. Yongmunsan M.T(II) Alt. 324m, 9 females, 11-25.vi.2009, J.O. Lim; ditto, 3 females, 26.vi-16.vii.2009, J.O. Lim; [CB] Danyang-gun Cheondong-ri Mt. Sobaeksan Bukbusa (M.T.), 1 male, 3.v.1997, D.K. Chung; ditto, 2 females, 14.x-24.xi.2005; Danyang-gun Danyang-eup Cheondong-ri (M.T.), 2 females, 5-26.vii.2009, S.H. Oh; Danyang-gun Danyang-eup Cheongdong-ri Cheongdong valley, 1 female, 19.iv-30.iv.2007, J.W. Lee; Danyang-gun Mt. Sobaeksan Biro valley, 1 female, 22.v.1997, D.K. Chung; ditto, 2 females, 23.v.1997, J.W. Lee; Goesan-gun Mt. Domyeongsan, 1 male, 9.vi.1986, G.S. Jeong; [CN] Asan-si Gangdanggol Anjangdang2, 5 males, 11.viii-8.xi.2001, J.W. Lee; [GB] Bonghwa-gun Mt. Mirimsan, 1 male, 4.v.1997, J.C. Jeong; Cheongdo-gun Geumcheon-myeon Gimjeon-ri, 1 female, 3.xi.2003, J.C. Jeong; Cheongdo-gun Unmun-myeon Mt. Unmunsan (U1), 1 male, 27.v.2017, J.H. Park; Cheongdo-gun Unmun-myeon Mt. Unmunsan Hak-sodaepokpo (U5), 1 male, 12.v-8.vi.2013; Cheongdo-gun Unmun-myeon Mt. Unmunsan Simsimgyegok(U6), 4 males, 12.v-8.vi.2013, J.W. Lee; Gyeongsan-si Daehakro 280 Yeongnam Univ., 1 female, 1.vi.1996, D.J. Yang; ditto, 2 males, 15-26.v.2009, J.W. Lee; ditto, 1 female & 3 males, 8.v-15.v.2009, J.W. Lee; ditto, 1 male, 17.v.2018, Y.M. Kim; Munkyong-si Dongro-myeon Myeongjeon-ri Mt. Woraksan, 1 male, 16.vii-6.xi.2015, J.C. Jeong; ditto, 1 female, 12.vi-16.vii.2015, J.C. Jeong; Seongju-gun Bongyang-ri Mt. Gayasan, 1 male, 4-28.v.2016, S.H. Kang; Yeongju-si Dansan-myeon Marak-ri San 46-5 Euopungii, 10 males, 4.v-2.vi.2016, Y.J. Kim; Yeongju-si Jwaseok-ri 207 Mt. Sobaeksan Yeonhwal-gyo, 3 males, 4.v-2.vi.2016, Y.J. Kim; Yeongju-si Punggi-eup Jungnyeong, 1 male, 21.viii-5.ix.2009; [GN] Hapcheon-gun Gaya-myeon Jukjeon-ri San 7-2, 2 males, 4-28.v.2016, S.H. Kang; Namhae-gun Nam-myeon Eungbongsan Alt 470m, 1 male, 22.v.2009, M.H. Jeong; Sancheong-gun Sicheon-myeon Jungsan-ri Mt. Jirisan Sunduryu, 1 male, 3-12.iv.1989, J.S. Park; ditto, 1 female & 2 males, 3.vi-12.vi.1989, J.W. Lee; [JB]

Jeongeup-si Jangseong-gun Bukhameon, 3 males, 21.vi.2005, K.B. Kim; 1 female 1 male, Jeongeup-si Naejang-dong Wonjeongam Rock, 29.v-8.vi.2007, J.W. Lee; Jeongeup-si ssan-gam-dong dapgok-ri, 1 male, 19.v.2005, K.B. Kim; Jeongeup-si Ibam-myeon deungcheon-ri Wetland (11site) M.T., 3 males, 19.v.2005, K.B. Kim; Yeongnam-gun Haksan-myeon Mukdong-ri Mt. Wolchulsan National Park (M.T.), 2 males, 25.iv-13.vi.2018, J.K. Choi and G.M. Song; [Seoul] Dobong-gu, 1 male, 14.v.1996, J.S. Lee; Dobong-gu Hwagyesa, 1 female, 10.vi.1987, G.H. Hong; Dobong-gu Mt. Bukhansan, 1 female & 1 male, 25.v.1998, M.A. Nam; Dobong-gu Mt. Dobongsan, 1 male, 1.vi.1987, H.W. Yun; Dobong-gu Mt. Suraksan, 1 male, 10.v.1997, J.H. Lee; Dobong-gu Sanggye-dong, 2 males, 6.vi.1985, J.A. Jang; Dongdaemun-gu Kyunghee Univ., 1 female, 31.v.1986, S. Jegal; Gangnam-gu Daechi-dong, 1 female, 26.v.1998, J.H. Kim; Gangnam-gu Mt. Daemosan, 1 male, 9.vi.1986, J.Y. Jeong; ditto, 1 male, 13.v.1998, Y.G. Choi; Gangnam-gu Mt. Guryongsan, 1 male, 27.v.1998, H.Y. Park; Gwanak-gu Mt. Gwanaksan, 1 male, 5.v.1998, H.G. Kang; Gwanak-gu Mt. Gwanaksan Gwaneumsa, 3 males, 20.v.2001; Gwangjin-gu Mt. Ichisan, 1 male, 6.vi.1996, I.H. Im; Nowon-gu Mt. Suraksan, 1 male, 31.v.1993, M.K. Lee; ditto, 2 males, 18.vi.1997, S.I. Hwang; ditto, 1 male, 9.v.1998, E.K. Ahn; Sanggye-dong Mt. Suraksan, 1 male, 1.vi.1997, M.Y. Kim; Seocho-gu Mt. Cheonggyesan, 1 male, 5.vi.1986, I.S. Y; ditto, 1 male, 15.v.2002, H.M. Yeom; ditto, 1 male, 21.v.2002, Y.J. Chae; ditto, 1 male, 26.v.2003, S.H. Choi; ditto, 1 female, 7.vi.2003, R.J. Kwon; Yangcheon-gu Mokdong, 1 male, 17.v.1997, J.H. Lee; [Daegu] Nam-gu Mt. Apsan, 1 male, 6.vi.2009, D.H. Kang; Nam-gu Mt. Daedeoksan, 1 male, 23.v.1987, H.Y. Jeong; ditto, 1 male, 28.v.1987, D.H. Heo; ditto, 2 males, 28.v.1987, M.S. Yang; [Daejeon] Dong-gu Daejeon Univ., 1 male, 18.v-14.vi.2007, J.W. Lee; ditto, 1 female & 4 males, 12.v-27.v.2013, J.W. Lee; Dong-gu Yon-gun-dong, 1 female, 30.v.1986, C.Y. Lee.

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

*Exetastes tomentosus* (Gravenhorst, 1829) 털보아리 뽕뚝맷시벌 (신칭) (Fig. 3D-F)

*Banchus tomentosus* Gravenhorst, 1829: 376. Type: ♀, TL:



Germany, TD: IZU.

*Exetastes tomentosus* Kokujev, 1913: 163. Emendation.

**Diagnosis.** Face convex medially, densely punctate; near upper margin with a small median tubercle; 0.6 times as long as wide (Fig. 3E). Malar space about 0.6 times as long as basal mandibular width. Antenna with 50 flagellomeres; first flagellomere 1.8 times as long as second flagellomere. Mesosoma

with dense and long pubescence. Pronotum with transversely fused punctures medially; upper posterior margin semi hook-shaped. Scutellum, in profile, slightly convex, densely punctate. Propodeum in dorsal view elongated; closely punctured tending to rugose partly with long and dense hairs; median longitudinal carina present (Fig. 3F). Ratio of hind tarsomeres are 5.5: 2.5: 2.0: 1.0: 1.4. Hind wing with 11 hamuli. Metasoma depressed with shallow and dense punctures. First tergite rectangular, 2.0



**Fig. 3.** A-C *Exetastes sapporensis*; D-F *E. tomentosus*. A, D: habitus in lateral view; B, E: head in frontal view; C, F: propodeum in dorsal view. Scale bars (A, D): 1.0 mm; (B, E, F): 0.2mm; (C): 0.5mm.

times as long as apical width without lateral longitudinal carina; with a groove medially. Second tergite coriaceous, 1.2 times as long as apical width.

**Color.** Black with yellowish brown metasoma (Fig. 3D). Face with yellow large spot medially; facial orbit broadly yellow. Clypeus entirely yellow. Mandible brown with yellow medially. Antenna brown with whitish band medially. Mesosoma with brown marks. Anterior edge of pronotum brown. Tegula brown. Anterior to upper edge of mesopleuron brown. Mesoscutum with a pair of very small yellow spot anteriorly on both sides. Scutellum with yellow spot medially. Fore and mid legs entirely yellow; coxae yellow with dark brown marks partly. Hind coxa and trochanter black; femur brown; tibia blackish yellow with yellow sub-basally; basi-tarsus blackish yellow with brighter? yellow apically; following tarsus yellow. Metasoma brown with bright apically. All tergites with yellow margin apically.

**Specimens examined:** [South Korea] [GG] Namyangju-si Palya-ri, 1 male, 3.v.1986, Y.J. Park; [Seoul] Gangnam-gu Daechi-dong, 1 male, 31.v.1986, Y.J. Park.

**Distribution:** South Korea (new record), Russia (Astrakhsanskaya Oblast; Samarskaya Oblast), Belgium, Croatia, France, Germany, Hungary, Kazakhstan, Latvia, Poland, Sweden, late Yugoslavia.

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## Statements for Authorship Position & Contribution

Kang, G.W.: Daegu National University of Education, Insect Inquiry Education Institute, Senior Researcher; performed overall procedures of research and wrote the manuscript

Lee, J.W.: Georim Entomological Institute, Research Director; Designed the research and wrote the manuscript

All authors read and approved the manuscript.

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