

Two Unrecorded Korean Species of the Genus *Cerceris* (Hymenoptera: Philanthidae), with a Checklist of Korean Philanthidae

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ABSTRACT

Cerceris rubida and *C. verhoeffi* are reported from Korea for the first time with detailed redescriptions. We also provide a checklist of Korean Philanthidae including 24 species.

Key words: *Cerceris*, *rubida*, *verhoeffi*, Philanthidae, checklist, Korea

INTRODUCTION

The family Philanthidae comprising six subfamilies belongs to the superfamily Apoidea (Finnamore, 1993). Korean fauna of Philanthidae has been known by the genus *Cerceris* and *Philanthus* (Tsuneki, 1982) which belong to subfamily Cercerinae and Philanthinae, respectively. The genus *Cerceris* contains over 850 species worldwide and found in every zoogeographical regions (Bohart and Menke, 1976). A total of 21 Korean species currently known (Tsuneki, 1982; Kim et al., 1994). The genus *Philanthus* contains about 135 species occurred mainly in Ethiopian, Palearctic and Nearctic Regions (Bohart and Menke, 1976), and only one species is currently known in Korea (Tsuneki, 1982).

So far as known, all the members of *Cerceris* and *Philanthus* are solitary, nest in the soil or sand, and hunt adult hymenopteran and coleopteran insects. Prey menu includes tipid wasps, ants, halictid bees, buprestid beetles, chrysomelid beetles, curculionid beetles (Yasumatsu and Okabe, 1936; Tsuneki, 1965; Yamane, 1999; O'Neill, 2001).

The family Philanthidae may be easily distinguished by the following combination of characteristics: antennal socket above frontoclypeal suture by at least one-third of socket diameter; forewing with three submarginal cells; and mandibular socket closed by a forward extension of the hypostoma.

As a result of this study, we report two unrecorded species of the genus *Cerceris* for the first time in Korea. These two species are carefully redescribed to include several characters neglected by previous authors. We also provide a checklist of 24 species of Korean Philanthidae.

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MATERIALS AND METHODS

For morphological terminology we followed mainly Bohart and Menke (1976) and partially Tsuneki (1961). All measurements were taken as the maximal length of the structure being measured under stereomicroscope. The body length was measured from the anterior margin of head to the posterior end of the last metasomal segment.

In the checklist section, species and subspecies are listed in alphabetical order, including original citation, relevant literature for Korean fauna, synonyms and distribution. Abbreviations for provincial names used herein are as follows: GG, Gyeonggi-do; GW, Gangweon-do; CB, Chungcheongbuk-do; CN, Chungcheongnam-do; GB, Gyeongsangbuk-do; GN, Gyeongsangnam-do; JB, Jeollabuk-do; JN, Jeollanam-do; JJ, Jeju-do. And for structures as follows: OOD, ocello-ocula distance; POD, postocellar distance.

RESULTS

Systematic account of two unrecorded Korean *Cerceris* species

¹**Cerceris rubida* (Jurine) (Fig. 1)

Philanthus rubidus Jurine, 1807: 202, ♀, Europe: no specific locality, perhaps France (Museum of Natural History, Geneva).

Diagnosis. This species is easily distinguished by the following character combination: presence of appendix somewhat emarginated in apical margin in the female (Fig. 1D), obsolete basal platform of sternum II in both sexes (Fig. 1H) and longitudinally carinate propodeal enclosure in both se-

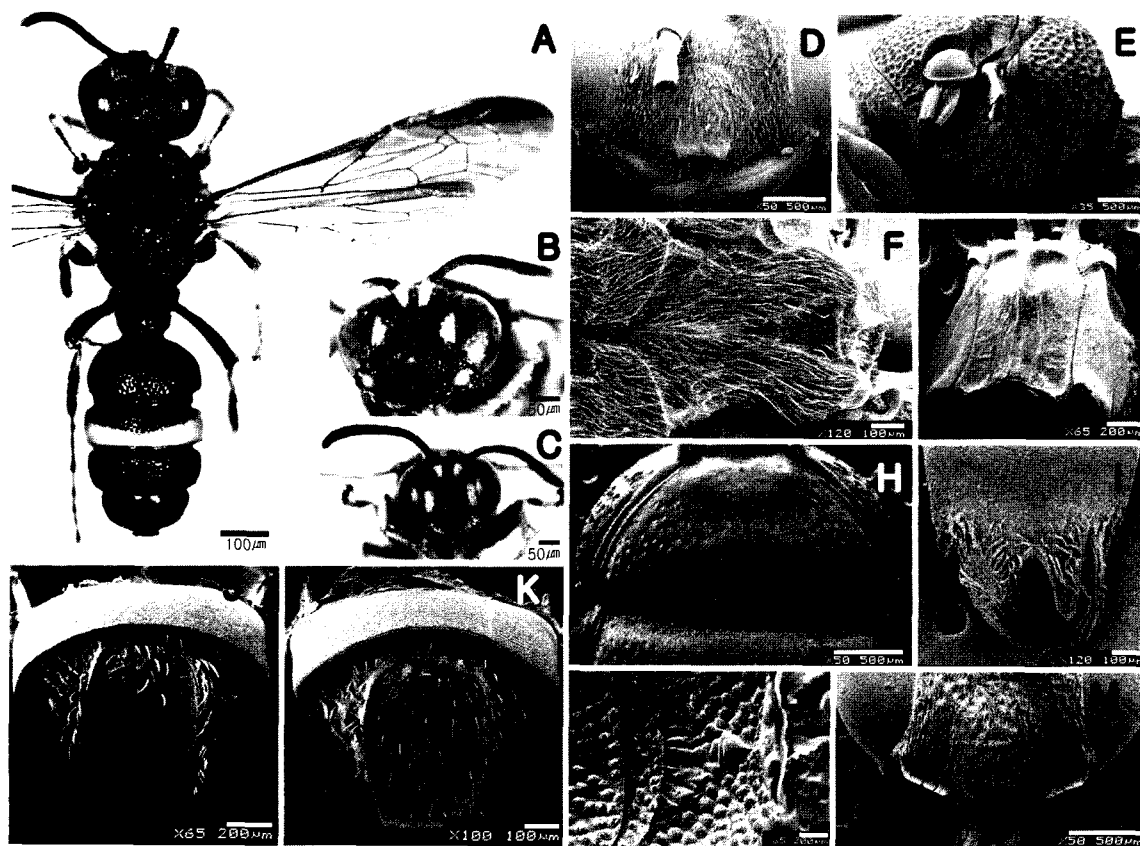


Fig. 1. *Cerceris rubida*. A, General habitus, ♀; B, Head, in frontal view, ♀; C, Head, in frontal view, ♂; D, Clypeus with appendix, ♀; E, Lateral part of mesosoma, ♀; F, Metasternum, ♀; G, Metasomal sternum I, ♀; H, Metasomal sternum II, ♀; I, Metasomal sternum VI, ♀; J, Metasomal tergum VI (pygidial plate), ♀; K, Metasomal tergum VI (pygidial plate), ♂; L, Propodeal dorsum, ♀; M, Clypeus, ♂.

xes (Fig. 1L).

Description. Female. Body length 9.0-10.6 mm (Fig. 1A). Clypeus with a large and wide (approximately half of the median lobe of clypeus in width) appendix, the appendix twice as broad as long, and emarginated apically; apical margin of median lobe of clypeus triemarginated, forming four teeth (two outer teeth acute and two inner teeth blunt) (Fig. 1D). OOD as long as POD. Flagellomere I twice as long as broad at apex. A row of large punctures on subapical portion of pronotal dorsum fused, and forming a broad transverse fovea anteriorly bordered by a carina, in some specimens the fovea costate at the bottom. Metasternum with a median longitudinal carina (touching apical fovea) and an equilateral triangular apical fovea (Fig. 1F). Metasomal segment I much broader than long, the width/the length approximately 1.9. Metasomal sternum I as in Fig. 1G: basal depression somewhat distinct. Basal platform of metasomal sternum II obsolete without distinct apical outline, while corresponding part widely somewhat swollen (Fig. 1H). Metasomal sternum VI as in Fig. 1I: each apical lobe some-

what tapering, and its apical tip somewhat acute. Pygidial plate as in Fig. 1J: 1.7 times as long as broad; lateral margins weakly convex (broadest in basal one-third), and apical margin widely round.

Clypeus densely (the interspaces among large punctures shorter than the puncture diameter) bipunctate, with both large and micropunctures in the whole face. Vertex and gena reticulate. Mesoscutum, scutellum, metanotum, propodeum (especially including propodeal enclosure as in Fig. 1L) and mesopleuron reticulate (Fig. 1E). Propleuron shagreened, with sparse (the interspaces longer than puncture diameter) punctures set irregularly. Metapleuron almost impunctate, with several longitudinal transverse carinae in the whole face. Pygidial plate dully reticulate in its basal one-third (sometimes in its half), and impunctate in the remaining part (Fig. 1J).

Jugal lobe of hindwing short, approximately 0.3 times as long as the anal cell; Radial cell and anterior apical portion of forewing cloudy.

Face below the antennal sockets except for apical margin

of clypeus with dense appressed silvery white hairs. Vertex and lower part of postgena with long erect hairs in addition to short ones, the both hairs sparse. Antennal scape with dense short slanted hairs and very sparse long hairs; all the antennal flagellum with very dense and short appressed hairs. Pronotum, mesoscutum, scutellum, metanotum, propodeum and mesopleuron with both sparse erect long and short hairs. Metasomal sternum V with both dense long slanted and short hairs. Each posterior lateral margin of metasomal sternum VI with a hair tuft. Fore and mid femur with sparse long erect hairs in addition to dense short ones, the latter approximately one-third of the former in length.

Body largely black, and following parts/markings yellow (Figs. 1A-C): an irregular small marking above clypeal appendix (sometimes absent), basal one-third of mandible, a pair of semicircular markings touching eyes in median portion of face, inner face of antennal scape, an irregular marking on anterior margin of tegula, a short (covering one-third to half of the tergum width) apical band on metasomal tergum II (sometimes lacking), an wide apical band on metasomal tergum III, an narrow apical band on metasomal tergum V, fore and mid tibiae except for their outer faces, and a small marking on basal part of hind tibia.

Male much as in the female except in the following details. Body smaller, the length 7.3-9.3 mm. Clypeus without appendix as in Fig. 1M; apical margins of lateral lobes of clypeus with hair brush composed of hairs of uniform length (almost as long as the hairs on clypeal disk) (Fig. 1M). Last flagellomere slightly curved; inner face with short appressed hairs (without short erect hairs). Metasomal segment I slightly broader than long, the width/the length approximately 1.25. Pygidial plate as in Fig. 1K: slightly longer than broad; lateral margins weakly convex (broadest in the middle), and apical margin almost truncated; moderately (the interspaces almost as long as the puncture diameter) punctate throughout the face. Apical band on metasomal tergum II more extended, sometimes covering entire width of tergum. Metasomal tergum III and tergum VI with yellow apical bands. But the apical band on tergum V lacking.

Specimens examined. [GG] 1♂, Gwacheon-si, Makgye-dong, Mt. Cheonggyesan, 22 Aug. 1991 (E.S. Park); 1♀, Gapyeong-gun, Cheongpyeong-myeon, Daeseong-ri, 20 Aug. 1993 (M.N. Son); 1♀, Seongnam-si, Namhansanseong, 28 Aug. 1993 (H.I. Sim); 1♀, Pocheon, Gangssibong, 28 Aug. 1997 (J.D. Yeo); 3♂♂, Yongin-si, Baekam-myeon, Oksan-ri, Hantaek Garden, 25 Jul. 2002 (J.D. Yeo); 4♂♂, ditto, 13 Aug. 2002 (Y.B. Lee); 1♀, ditto; 1♀, Ansan-si, Sangrok-gu, Jangha-dong, 10 Oct. 2006 (J.S. Lee); 1

♀, Gwacheon-si, Makgye-dong, Mt. Cheonggyesan, 17 Aug. 2007 (J.S. Lee); 1♂, Incheon, Gyeyang-gu, Moksang-dong, Mt. Gyeyangsan, 25 Aug. 2007 (I.C. Hwang) [GW] 1♀, Cheolwon, Umi-dong, 29 Aug. 1967 (J.I. Kim); 1♀, Chuncheon-si, Buksan-myeon, Jogyo-ri, 24 Sep. 2006 (J.K. Kim) [CB] 1♂, Chungju-si, Sancheok-myeon, Mt. Cheondeungsan, 5 Aug. 2002 (J.K. Kim); 2♂♂, Chungju-si, Anseong-myeon, Bonpyeong-ri, Bokseong Reservoir, 22 Jul. 2007 (J.K. Kim); 1♂, ditto, (S.P. Han); 1♂, ditto, (S.B. Ha); 1♀, ditto, (J.K. Kim) [CN] 2♀♀, Seosan-si, Haemi-myeon, Daegok-ri, Mt. Gayasan, 10 Aug. 2007 (I.N. Kim); 9♀♀, ditto, 19 Aug. 2007 (I.N. Kim); 2♀♀, Yesan-gun, Daeheung-myeon, Daeryul-ri, 9 Sep. 2007 (J.S. Lee); 1♀, Gongju-si, Yugu-eup, Nokcheon-ri, 11 Sep. 2007 (J.S. Lee); 2♀♀, Yesan-gun, Gwangsi-myeon, Jangsin-ri, 11 Sep. 2007 (J.S. Lee); 1♂, Yesan-gun, Daesul-myeon, Songseok-ri, 12 Sep. 2007 (J.S. Lee); 1♀, Gongju-si, Uidang-myeon, Jungheung-ri, 20 Sep. 2007 (J.S. Lee) [GB] 3♂♂, Seongju-gun, Geumsu-myeon, Yeongcheon-ri, 15 Aug. 1999 (J.D. Yeo); 1♀, ditto, (J.K. Kim) [GN] 1♀, Geoje-si, Hacheong-myeon, Seokpo-ri, 13 Oct. 2007 (J.S. Lee) [JB] 2♂♂, Wanju-gun, Oknyeobong, 1 Aug. 1997 (M.R. Kim); 1♀, Gochang-gun, Mujang-myeon, Mt. Sununsan, 27 Aug. 2007 (I.C. Hwang); 2♂♂, ditto, (I.C. Hwang) [JN] 1♀, Hainam-gun, Hyangrobong, 14 Aug. 1972 (C.H. Kim); 1♀, ditto, (J.I. Kim); 1♂, Wando-gun, Gogeumdo, 5 Sep. 2003 (J.K. Kim); 1♀, ditto, (J.K. Kim); 3♀♀, Boseong-gun, Bongnae-myeon, Yongjeon-ri, 14 Aug. 2007 (I.C. Hwang); 2♂♂, ditto, (J.S. Lee).

Distribution. Transpalaeartic: South Europe through West Asia, Asia Minor to North East China, Far Eastern Russia, Korea (new record) and Japan.

¹**Cerceris verhoeffi* Tsuneki (Fig. 2)

Cerceris verhoeffi Tsuneki, 1961: 55, ♀, Harbin, Heilongjiang, China (Rijksmuseum van Natuurlijke Historie, Leiden).

Diagnosis. This species is easily distinguished by the following character combination: presence of clypeal appendix truncated apically in the female (Fig. 2D), obsolete basal platform of sternum II in both sexes (Fig. 2H), and smooth and polished (at most with fine sparse punctures) propodeal enclosure in both sexes (Fig. 2K).

Description. Female. Body length 9.3-10.8 mm (Fig. 2A). Clypeus with short and narrow (approximately 1/3 of the median lobe of clypeus in width) appendix, the appendix twice as broad as long, and almost truncate apically; apical margin of median lobe of clypeus quidiemarginated (two

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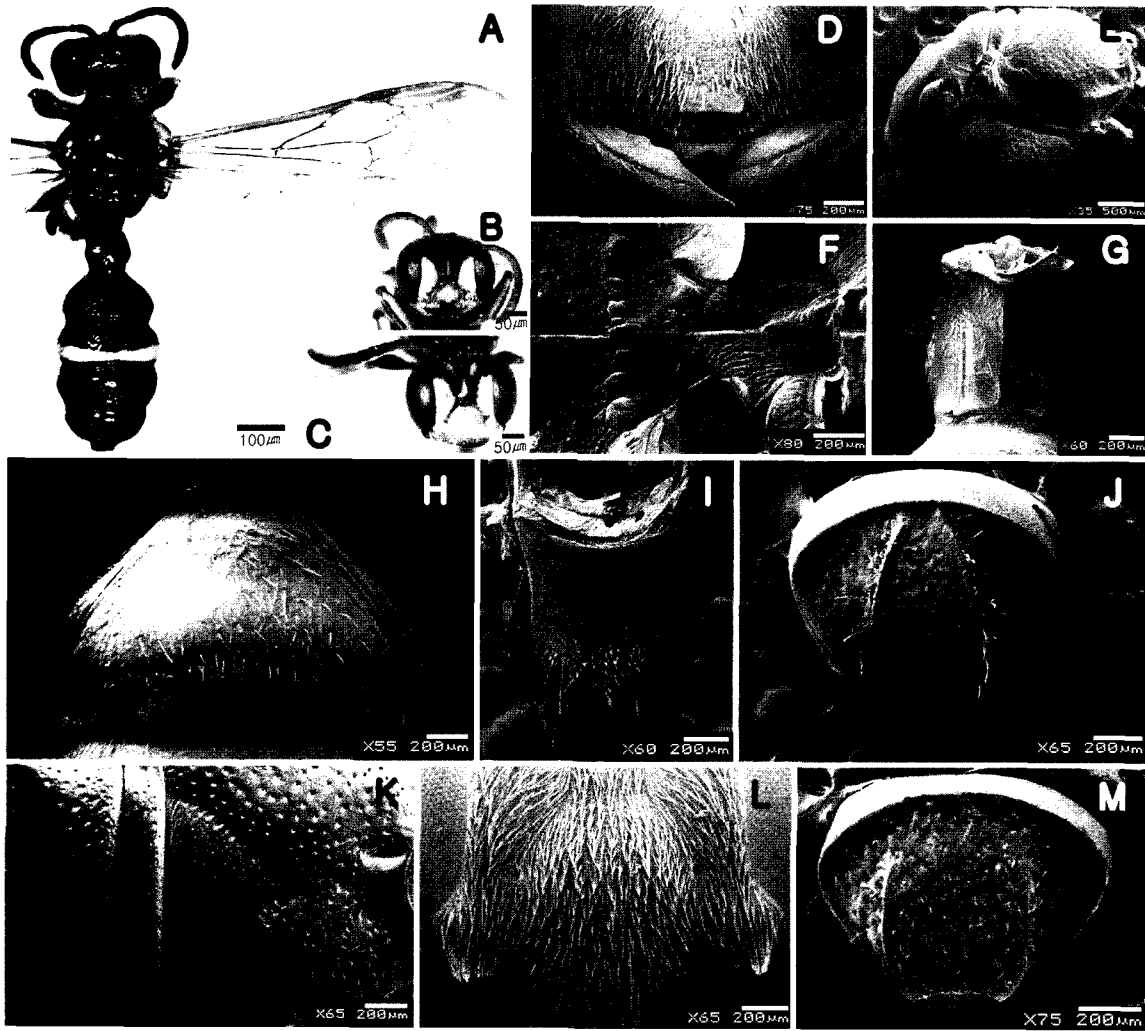


Fig. 2. *Cerceris verhoeffi*. A, General habitus, ♀; B, Head, in fontal view, ♀; C, Head, in fontal view, ♂; D, Clypeus with appendix, ♀; E, Lateral part of mesosoma, ♀; F, Metasternum, ♀; G, Metasomal sternum I, ♀; H, Metasomal sternum II, ♀; I, Metasomal sternum VI, ♀; J, Metasomal tergum VI (pygidial plate), ♀; K, Propodeal dorsum, ♀; L, Clypeus, ♂; M, Metasomal tergum VI (pygidial plate), ♂.

submedial emargination very slight), forming five teeth (two outer teeth somewhat acute and three inner teeth blunt) (Fig. 2D). OOD 1.4 times as long as POD. Flagellomere I twice as long as broad at apex. Metasterum with a median longitudinal carina (touching apical fovea), and an equilateral triangular apical fovea (Fig. 2F). Metasomal segment I slightly broader than long, the width/the length approximately 1.2; lateral margins convex, the broadest in basal three-fourths. Metasomal tergum I with apical lamella (membraneous margin), the lamella flat and in the same plane of tergal disk. Metasomal sternum I as in Fig. 2G: basal depression weak. Basal platform of metasomal sternum II obsolete without distinct apical outline, while corresponding part widely swollen (Fig. 2H). Sternum VI as in Fig. 2I:

lateral marging of each apical lobe somewhat parallel, and apical margin widely rounded. Pygidial plate as in Fig. 2J: approximately 2.2 times as long as broad; long oval in shape (broadest in the middle and apical margin widely rounded).

Clypeus bipunctate with dense micropunctures and sparse small punctures (Fig. 2D). Vertex densely punctate. Lower part of gena densely punctate with partial carinae. Pronotum, mesoscutum, scutellum, metanotum and propodeum except for propodeal enclosure bipunctate with moderate small punctures and sparse micropunctures (Fig. 2E); propodeal enclosure with sparse micropunctures (Fig. 2K). Propopleuron with dense micropunctures. Mesopleuron weakly reticulate (Fig. 2E). Metapleuron almost impunctate,

with several longitudinal transverse carinae in the whole face. Whole face of pygidial plate dully crumpled without distinct puncture (Fig. 2J).

Jugal lobe of hindwing short, approximately 0.25 times as long as the anal cell; radial cell and anterior apical portion of forewing cloudy.

Face below the antennal sockets except for apical margin of clypeus with dense appressed silvery white hairs. Vertex and lower part of postgena with both sparse erect long and short hairs. Antennal scape with both dense short slanted hairs and very sparse long hairs; all the antennal flagellum with very dense short appressed hairs. Pronotum, mesoscutum, scutellum, metanotum, propodeum except for propodeal enclosure, mesopleuron and metasomal tergum I with both sparse erect long and short hairs. Metasomal sternum V with both dense erect long and short hairs. Each posterior lateral margin of metasomal sternum VI with a hair tuft. All femora with sparse long erect hairs in addition to very dense short ones; short ones approximately one-third of the long ones in length.

Body largely black, and following parts/markings yellow (Figs. 2A-C): larger part of clypeus (sometimes entire face except for apical margin), basal half of mandible, a pair of semicircular markings touching eyes in median portion of face, a small marking on the anterior margin of tegula, an apical band on metasomal tergum III, an apical band on metasomal tergum V, all tibiae except for their outer faces, and hind trochanter.

Male much as in the female except in the following details. Body smaller, the length 9.7-10.0 mm. Clypeus without appendix (Fig. 2L). Each apical margin of lateral lobes of clypeus with hair brush; the outer most hairs the longest (about twice as long as the hairs on clypeal disk) and getting shorter towards inner part (Fig. 2L). Last flagellomere of antennae simple, not bent; inner face with short appressed hairs (without short erect hairs). Metasomal segment I longer than broad, the length/the width approximately 1.25. Pygidial plate as in Fig. 2M: as broad as long; lateral margins weakly convex (broadest in the middle), and apical margin widely rounded; moderately punctate throughout the face (the interspaces with sparse micropunctures). In addition to the markings seen in the female, following parts/markings yellow: inner face of antennal scape, mid trochanter, an apical band on tergum VI, a marking on tergum VII (sometimes absent). But the apical band on tergum V lacking.

Specimens examined. [GG] 1♂, Bokwangsa, 14 Jun. 1987 (H.G. Myeng); 1♀, Pocheon-gun, Ildong, Gangssibong, 28 Jun. 1998 (J.D. Yeo); 1♀, Pocheon-gun, Ildong,

Gangssibong, 27 Jun. 1999 (J.D. Yeo) [GW] 1♀, Bukpyeng, Samhwasa, 26 Jun. 1984 (M.A. Kang); 1♀, ditto, (M.W. Kang); 1♀, Yeongweol-gun, Geoun-ri, 27 Jun. 2007 (I.N. Kim) [CB] 1♀, Chungju-si, Angseong-myeon, Yongdae-ri, Mt. Gukmangsan, 22 Jun. 2007 (J.K. Kim) [CN] 1♂, Gongju-si, Mt. Gyeryongsan, 6 Jun. 1997 (G.H. Kim); 1♀, Seosan-si, Haemi-myeon, Mt. Kayasan, 7 Jul. 2006 (J.S. Lee); 1♀, Yesan-gun, Deoksan-myeon, Okgye-ri, Okgye Reservoir, 17 Jun. 2007 (J.S. Lee) [GB] 1♀, Mt. Juwangsan, Naewondong, 5 Jun. 1989 (S.Y.L.) [GN] 1♀, Mt. Kayasan, 5 Aug. 1960 (C.H. Kim) [JB] 1♀, Mt. Naejangsan, 3 Aug. 1974 (J.I. Kim); 1♀, Muju, Mt. Minjujisan, 9 Jul. 1998 (J.D. Yeo).

Distribution. North East China, Far Eastern Russia, Korea (new record).

Checklist of Korean species of Philanthidae

¹*Subfamily Philanthinae

Of six subfamilies in Philanthidae (Finnamore, 1993), this subfamily may be easily distinguished by the following combination of characteristics: hind femur simple apically; mesopleuron with episternal groove usually extending to ventral region; eye with inner orbit sharply angulate or emarginate, the angle sometimes weak in male whose eyes strongly converge toward vertex; media of hindwing diverging near or before cu-a; mesopleuron without scrobal groove.

²*Genus *Philanthus* Fabricius

Philanthus Fabricius, 1790: 224. Type species: *Philanthus coronatus* Fabricius, 1790 [= *Sphex coronata* Thunberg, 1784], designated by Shuckard, 1837: 246.

Subfamily Philanthinae is composed of two genera, *Philanthus* and *Trachypus*. The former may be distinguished by the following combination of characteristics from the latter: last antennal article somewhat rounded apically, with a partly ventral, oval polished spot; and first metasomal segment usually broader than long.

³**Philanthus coronatus* (Thunberg)

Sphex coronata Thunberg, 1784: 25, ♂ (lectotype designated by v.d. Vecht, 1961: 61), France (Museum National d'Histoire Naturelle, Paris).

Philanthus coronatus (Thunberg, 1784): Vecht, 1961: 61, (lectotype designated), Italy (Zoologisches Museum, Bonn); Tsuneki, 1982: 18 (listed).

¹*황노래기벌아과 (신칭), ²*황노래기벌속 (신칭), ³*금관노래기벌 (신칭)

Distribution. Transpalaeartic: Europe through Russia to North Korea (not critically studied in Asian part).

¹*Subfamily Cercerinae

This subfamily can be diagnosed by the following combination of characteristics: presence of valley like scrobal sulcus and absence of an episternal sulcus in mesopleuron; hind femur truncate apically with a flattened area or apicoventral process; widely separated mid coxae; rounded apex of the marginal cell in the forewing; and media of hindwing diverging well beyond cu-a. The combination of any three of these will distinguish this subfamily, but the broad, deep scrobal sulcus by itself is unique.

²*Genus *Cerceris* Latreille

Cerceris Latreille, 1802: 367. Type species: *Philanthus ornatus* Fabricius, 1790 [= *Sphex rybyensis* Linnaeus, 1771], designated by Latreille, 1810: 438.

Subfamily Cercerinae is composed of two genera, *Cerceris* and *Eucerceris*. *Cerceris* can be diagnosed by the following combination of characteristics: outer veinlet of submarginal cell III meeting marginal cell before its outer third; and terga without median or submedian transverse depressions. And Korean species of this genus is easily recognized by the distinct metasomal segment constricted between segments.

³**Cerceris adelpha* Kohl

Cerceris adelpha Kohl in Schletterer, 1887: 447, ♀ (Lectotype, designated by Kohl 1916, Korea (Kraków, Poland); Schletterer, 1887: 485 (listed); Tsuneki, 1961: 12 (in key), 18 (in key), 42; Kim, 1970: 622; Bohart and Menke, 1976: 576 (listed); Kazenas, 1979: 85 (in key); Tsuneki, 1982: 12-13, 18 (listed); Kazenas, 1995: 473 (in key).

Cerceris hokkanzana Tsuneki, 1961: 17 (in key), 43, ♂ [nec ♀], "Soyozan" [Mt. Soyosan] / "Kainei", North Korea; Tsuneki, 1982: 13 (synonymized ♂ with *C. adelpha*).

Distribution. Mongolia, North East China, Far Eastern Russia and Korea.

⁴**Cerceris albofasciata* (Rossi)

Cerceris navitatis Smith, 1873: 195, ♀, Hakaodate, Japan (Natural History Museum, London); Tsuneki, 1961: 26 (synonymized with *C. albofasciata*).

Vespa albofasciata Rossi, 1790: 87, ♀, "Etruria" [Tosca-

na], Italy (type despository uncertain).

Cerceris albofasciata (Rossi): Tsuneki, 1961: 10 (in key), 17 (in key), 25 (in key), 26 (in key), 41; Kim, 1970: 622; Tsuneki, 1982: 18 (listed); Kazenas, 1995: 472 (in key); Yamane, 1999: 546.

Distribution. Transpalaeartic: Europe, through Central Asia to East Mongolia, North East China, Far Eastern Russia, Korea and Japan.

⁵**Cerceris arenaria* (Linnaeus)

Sphex arenaria Linnaeus, 1758: 571, ♀, Sweden: no specific locality (Linnean Society, London), incorrect original termination in species-epithet.

Cerceris arenaria (Linnaeus): Tsuneki, 1961: 19 (in key), 41; Kim, 1970: 622; Kim, 1980: 144; Tsuneki, 1982: 18 (listed); Kazenas, 1995: 473 (in key); Yamane, 1999: 545.

Distribution. Transpalaeartic: North Africa through Europe to North East China, Far Eastern Russia, Korea and Japan.

⁶**Cerceris bicincta* Klug

Cerceris bicincta Klug in Waltl, 1835: 100, ♂, Andalusia, Spain (Zoologisches Museum der Humboldt Universitat, Berlin); Tsuneki, 1961: 10 (in key), 16 (in key), 41; Kim, 1970: 623; Tsuneki, 1982: 18 (listed); Kazenas, 1995: 472 (in key).

Distribution. Transpalaeartic: Europe through Central Asia to Mogolia, North China, Far Eastern Russia and Korea.

⁷**Cerceris coreensis* Tsuneki

Cerceris coreensis Tsuneki, 1961: 11 (in key), 17-18 (in key), 45, ♀ ♂, "Shoyozan" [Mt. Soyosan], Korea (Smithsonian Institute, Washington D.C.); Kim, 1970: 623; Bohart and Menke, 1976: 579 (listed); Tsuneki, 1982: 19; Kazenas, 1995: 472 (in key).

Distribution. Far Eastern Russia and Korea.

⁸**Cerceris hortivaga* Kohl

Cerceris hortivaga Kohl, 1880: 223, ♀ ♂, "Levico, Sütirol, Austria" [Alto Adige, Italy, Levico] (Naturhistorische Museum, Wien); Radoszkowski, 1890: 231; Tsuneki, 1961: 9 (in key), 15 (in key), 24 (in key), 25 (in key), 36; Kim, 1970: 624; Tsuneki, 1974: 371; Tsuneki, 1982: 18 (listed); Tsuneki, 1991: 201; Kazenas, 1995: 471 (in key); Yamane, 1995: 14; Yamane, 1999: 545.

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Distribution. Transpalaeartic: North Africa through Europe through to Mongolia, North China, Far Eastern Russia, Korea and Japan.

¹**Cerceris koma* Tsuneki

Cerceris koma Tsuneki, 1961: 8 (in key), 40, ♀, “Hokkanzan, Keijo”, [Mt. Bukhansan, Seoul] Korea (Smithsonian Institute, Washington D.C.); Kim, 1970: 624; Bohart and Menke, 1976: 583 (listed); Tsuneki, 1982: 18 (listed); Kazenas, 1995: 470 (in key).

Distribution. Korea.

²**Cerceris koryo* Tsuneki

Cerceris koryo Tsuneki, 1961: 18 (in key), 43, ♂, “Koryo” [Gwangjeung], Korea (Smithsonian Institute, Washington D.C.); Kim, 1970: 625; Bohart and Menke, 1976: 583 (listed); Tsuneki, 1982: 18 (listed); Kazenas, 1995: 479 (in key).

Distribution. Korea.

³**Cerceris nipponensis* Tsuneki

Cerceris nipponensis Tsuneki, 1961: 31, ♀ ♂, Mont Haku, Ishikawa, Japan (The Museum of Nature and Human Activities, Hyogo); Tsuneki, 1968a: 51; Tsuneki, 1968b: 59; Kim, 1970: 625; Yamane, 1995: 17; Yamane, 1999: 547.

Distribution. Koera, Japan.

⁴**Cerceris pedetes* Kohl

Cerceris pedetes Kohl in Schletterer, 1887: 449, 498 (listed), ♀, Korea: no specific locality (Kraków, Poland); Tsuneki, 1961: 13 (in key), 25 (in key), 42; Kim, 1970: 625; Tsuneki, 1982: 18 (listed); Kazenas, 1995: 474 (in key).

Distribution. North East China, Far Eastern Russia, Korea, Japan.

⁵**Cerceris quadrfasciata* (Panzer)

Philanthus quadrfasciatus Panzer, 1799: pl. 14 (type information uncertain).

Cerceris quadrfasciata (Panzer): Tsuneki, 1961: 12 (in key), 18 (in key), 44, 58; Kim, 1970: 626; Tsuneki, 1982: 18 (listed); Kazenas, 1995: 473 (in key).

Distribution. Transpalaeartic: Europe through Russia to North East China, Far Eastern Russia and Korea.

⁶**Cerceris quinquefasciata seoulensis* Tsuneki

Cerceris quinquefasciata seoulensis Tsuneki, 1961: 12 (in key), 18 (in key), 44, ♀ ♂, Seoul, Korea (Smithsonian Institute, Washington D.C.); Kim, 1970: 626 (in text); Bohart and Menke, 1976: 586 (listed); Tsuneki, 1982: 18 (listed); Kazenas, 1995: 473 (in key).

Distribution. North East China, Korea.

⁷**Cerceris rubida* (Jurine)

Philanthus rubidus Jurine, 1807: 202, ♀, Europe: no specific locality, perhaps France (Museum of Natural History, Geneva).

Cerceris rubidus (Jurine): Lee et al., 2008, this study.

Distribution. Transpalaeartic: South Europe through West Asia, Asia Minor to North East China, Far Eastern Russia, Korea (new record) and Japan.

⁸**Cerceris ruficornis* (Fabricius)

Philanthus ruficornis Fabricius, 1793: 292, ♂ (originally sex not indicated, but designated by v. d. Vecht, 1961: 65), Italy: no specific locality (Zoologisches Museum, Bonn).

Cerceris ruficornis (Fabricius): Tsuneki, 1961: 13 (in key), 17 (in key), 44; Kim, 1970: 626; Tsuneki, 1982: 18 (listed); Kazenas, 1995: 474 (in key).

Distribution. Transpalaeartic: Europe through Russia to North China, Far Eastern Russia and North Korea.

⁹**Cerceris rybyensis* (Linnaeus)

Sphex rybyensis Linnaeus, 1771: 88, ♀ (originally sex not indicated, but designated by Day, 1979: 71), “Söermanland”, Sweden, (Linnean Society, London).

Cerceris rybyensis (Linnaeus): Tsuneki, 1974: 371; Tsuneki, 1982: 18 (listed); Tsuneki, 1991: 201; Kazenas, 1995: 471 (in key), 476-477 (in key).

Distribution. Transpalaeartic: North Africa through Europe, Eastward to Russia and North Korea.

¹⁰**Cerceris sabulosa subgibbosa* Yasumatsu

Cerceris subgibbosa Yasumatsu, 1935: 15, 25, ♀, “Hopeh, Cheng-teh”, China (type depository uncertain).

¹* 고려노래기벌, ²* 광릉노래기벌, ³* 니폰노래기벌, ⁴* 흥다리노래기벌, ⁵* 네줄노래기벌, ⁶* 서울네줄노래기벌, ⁷* 두줄노래기벌 (신칭), ⁸* 백두산노래기벌, ⁹* 둥근무늬노래기벌, ¹⁰* 사불로사노래기벌

Cerceris sabulosa subgibbosa Yasumatsu: Tsuneki, 1961: 10 (in key), 16 (in key), 36; Kim, 1970: 627; Kazenas, 1979: 83 (in key), 87 (in key); Tsuneki, 1982: 13, 18 (listed); Kazenas, 1995: 471 (in key), 477 (in key).

Distribution. Central and North East China, Far Eastern Russia, Korea.

¹**Cerceris saishuensis* Tsuneki

Cerceris saishuensis Tsuneki, 1968a: 53, ♂, Mt. Hanna, "Quelquepart Island" [Jeju Island], Korea (The Museum of Nature and Human Activities, Hyogo); Kim, 1970: 627; Bohart and Menke, 1976: 587 (listed); Hashimoto and Nakanishi, 1997: 29 (type information).

Distribution. Korea (Jeju Island).

²**Cerceris semilunata* Radoszkowski

Cerceris semilunata Radoszkowski, 1870: 105, ♀, Amur area, Russia (type depository uncertain); Kazenas, 1995: 474 (in key), 478 (in key).

Cerceris hokkazanana Tsuneki, 1961: 13 (in key), 17 (in key), 42, ♀ [nec ♂, see synonym list under *C. adelpha*], "Hokkazan, Keijo" [Mt. Bukhansan, Seoul], Korea (Smithsonian Institute, Washington D.C.); Kim, 1970: 624; Tsuneki, 1974: 372; Tsuneki, 1982: 18 (listed); Tsuneki, 1991: 201; Kazenas, 1995: 474 (synonymized with *C. semilunata*).

Distribution. Mongolia, North China, Far Eastern Russia, Korea.

³**Cerceris shirozui* Tsuneki

Cerceris shirozui Tsuneki, 1968a: 51, ♀, Mt. Hanna, "Quelquepart Island" [Jeju Island], Korea (The Museum of Nature and Human Activities, Hyogo); Kim, 1970: 627; Bohart and Menke, 1976: 587 (listed); Hashimoto and Nakanishi, 1997: 29 (type information).

Distribution. Korea (Jeju Island).

⁴**Cerceris sobo* Yasumatsu and Okabe

Cerceris sobo Yasumatsu and Okabe, 1936: 497, 500, ♀, Kôaru, Kyushu, Japan (type depository uncertain); Tsuneki, 1961: 7 (in key), 15 (in key), 23-24 (in key), 31, 39 (description of ♂); Kim, 1970: 628; Tsuneki, 1974: 372; Tsuneki, 1982: 18 (listed); Tsuneki, 1991: 201; Kazenas, 1995: 468 (in key), 476 (in key).

Distribution. Korea, Japan.

⁵**Cerceris supraconica* Tsuneki

Cerceris supraconica Tsuneki, 1961: 8 (in key), 15 (in key), 38, ♀, ♂ Mt. Kaya, Korea (Smithsonian Institute, Washington D.C.); Kim, 1970: 629; Bohart and Menke, 1976: 588 (listed); Tsuneki, 1982: 18 (listed); Kazenas, 1995: 470 (in key), 476 (in key).

Distribution. Korea.

⁶**Cerceris unifasciata* Smith

Cerceris unifasciata Smith, 1856, 456, ♀, North China: no specific locality (Natural History Museum, London); Uchida, 1925a: 331; Uchida, 1925b: 369 (in table).

Distribution. North China, North Korea (Hwasan).

Remarks. Based on the misconception of Matsumura (1911: 115), Far Eastern *Cerceris hortivaga* had been often misidentified as this species in early twenties (refer to Tsuneki, 1961). Furthermore the work of Uchida (1925) the only record of Korean occurrence of this species had no given any taxonomic clue on this matter. Thus the future confirmation on Korean occurrence of this species is needed.

⁷**Cerceris verhoeffi* Tsuneki

Cerceris verhoeffi Tsuneki, 1961: 55, ♀, Harbin, Heilungkiang, China (Rijksmuseum van Natuurlijke Historie, Leiden); Lee et al., 2008, this study.

Distribution. North East china, Far Eastern Russia, Korea (new record).

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¹*제주노래기벌, ²*북한산노래기벌, ³*시즈로노래기벌, ⁴*소보노래기벌, ⁵*코주부노래기벌, ⁶*외줄노래기벌 (신칭), ⁷*민노래기벌 (신칭)

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