

First Record of *Psen ussuriensis* (Hymenoptera: Crabronidae: Pemphredoninae) from Korea, with a Key and Checklist of Current Valid Species of Korean Pemphredoninae

Jeong-Kyu Kim* and Hyeon Woo Yang

Department of Biological Sciences, Hanseo University, Seosan-si, Chungcheongnam-do 356-706, Korea

ABSTRACT

Psen ussuriensis Lith is reported for the first time in Korea. Diagnostic description and digital images of this species are provided. For future researchers, a key to higher taxa and a checklist of 36 valid Korean Pemphredoninae species are also given.

Keywords: *Psen ussuriensis*, checklist, Pemphredoninae, Korea

INTRODUCTION

Subfamily Pemphredoninae is better known as aphid wasps among family Crabronidae, and comprises about 1056 worldwide species in four tribes (Plawski, 2010). Except for social in one genus *Microstigmus*, all the other members of this subfamily are solitary wasps, nesting in hollow twigs or stems or soil, and provisioning with mainly various Homopteran families for the young (Bohart and Menke, 1976; Finnamore and Michener, 1993; Yamane, 1999; O'Neil, 2001).

They could be separated from other crabronid species by the following combination of characteristics: mesotibia with one apical spur; hindwing with jugal lobe less than half length of area posterior to claval notch; forewing with stigma almost as large as first discal cell or larger; metasoma usually petiolate, petiol (sometimes short, broader than long) composed of sternum I only, but in some genera almost sessile or very shortly petiolated.

Recently in the process of examining Korean Pemphredoninae, we found several specimens of *Psen ussuriensis* Lith so far unknown in Korea. Of the known Far eastern species, this species is unique by having quite expanded mandible as described below. We list this species as one of Korean aphid wasps in the present paper. Diagnostic description complemented by digital images is provided. In addition, a key to higher taxa (Tribes, Subtribes and Genera) and a

checklist of 36 valid Korean species of Pemphredoninae compiled from previous works are also given for future researchers.

MATERIALS AND METHODS

Morphological terminologies used in description of *P. ussuriensis* and key mainly followed Bohart and Menke (1976). All measurements were taken as the maximal length of the part being taken under an image analyzer (Tomoro Digital Imaging). Body length was measured from anterior margin of head to posterior end of metasoma.

In checklist section, enumeration of higher taxa is the same as the appearance order in the key, and the species is alphabetically ordered in each genus. Original citation together with type information, relevant subsequent citations for Korean fauna, and related major synonymic information were included in the synonym list of each species.

RESULTS

Systematic accounts of *Psen ussuriensis* Lith

¹*Psen ussuriensis* Lith

Mimesa orientalis Gussakovskij, 1932; 5-6, ♂ (Syntype) Russia, Primorskiy Kray, Sutshan and Tigrovaya (Stockholm) [Junior secondary homonym of *Psen orientalis* Cameron, 1890].

*To whom correspondence should be addressed
Tel: 82-41-660-1349, Fax: 82-41-688-3403
E-mail: kwasp@chol.com

¹*우수리먹꼬마구명벌 (신칭)

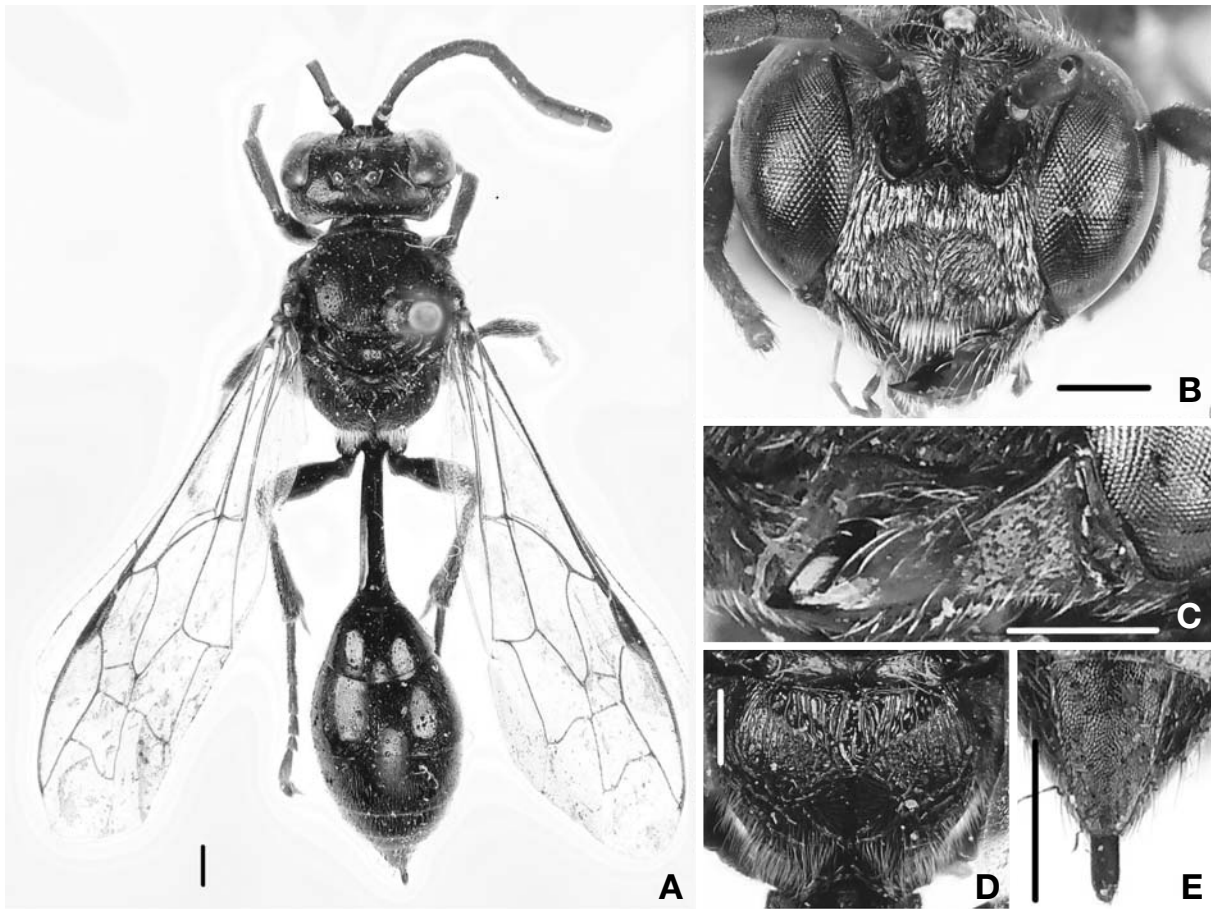


Fig. 1. External features of *Psen ussuriensis*, ♀ (A-E). A, general habitus, dorsal view; B, Head, in front; C, Mandible; D, Propodeum in dorsal view; E, Pygidial plate. Scale bars: 0.5 mm.

Psen ussuriensis Lith, 1959: 59 [Substitute name for *Psen orientalis* (Gussakovskij)].

Female. Body length 10 mm, and forewing length 7.5 mm (Fig. 1A).

Head. In frontal view broader than long, 1.37 X as broad as long (Fig. 1B). Gena in its broadest portion in profile approximately 1.60 X of the eye with sparse small punctures and appressed short hairs. Larger median part of clypeus somewhat polished with dense punctures almost touching one another, lateral parts with dense slanted brassy hairs in addition to suberect sparse long hairs scattered on entire clypeal face (Fig. 1B); apicomedian produced area of clypeus shagreened, and its apical margin slightly emarginate (Fig. 1C). Mandible expanded near middle; its apex acute and near apices broadly polished; ventral parts shagreened, and basal parts somewhat densely punctate and hairy (Fig. 1C). Frons flat with moderate to sparse small punctures and slanted hairs somewhat stiff; frontal carina almost up to anterior ocellus weakly developed. Entire supraclypeal area with dense appres-

sed silvery hairs of which condition same as ones in lateral parts of clypeus (Fig. 1B). Apical margin of labrum rounded, with long dense stiff pale yellow hairs (Fig. 1B). Vertex polished with dense punctures and tiny hairs. Ocellar region with sparse to moderate punctures and tiny hairs.

Mesosoma. Anterior sloping face of pronotum shagreened; anterior half of pronotal lateral face with moderate punctures and hairs, but polished in remaining posterior half; entire face of pronotal dorsum shiny, with tangled silvery hairs moderately set. Mesonotum moderate to dense (especially in its posterior part) punctures. Mesopleuron with moderate small punctures and slant tiny long hairs. Metapleuron impunctate and polished. Scutellum shiny with irregular sparse to moderate punctures and long erect hairs. Metanotum shiny with irregular sparse punctures and erect long hairs. Propodeal enclosure longitudinally carinate and shiny without punctures and hairs; remaining propodeal dorsum longitudinally carinate with dense long erect hairs, carina more irregular, weaker than ones in propodeal enclosure, and somewhat reticulate

in its posterior half; lateral propodeal face almost impunctate and shiny; median groove of posterior face shallow (Fig. 1D). *Metasoma*. Petiol impunctate and shiny with downward hairs in its lateral and ventral parts; slightly longer than hind femur (approximately 1.2 X as long as). Metasomal tergum with sparse to moderate punctures and short erect pale silvery or brassy hairs. Pygidial plate evenly convergent, and its entire face shagreened with very scattered punctures (Fig. 1E).

Coloration. Ground color of body black, but brown in the following parts: labrum, mandible tegula, fore tibia and tarsus apical half of, mid tibia (tinged with yellow in its apical part) and tarsus, and hind tarsus. Yellowish brown in the following parts: labial and maxillary palpi and glossa. Lateral and posterior marginal parts of metasomal terga I-V reddish brown. Male. Unavailable in this study.

Specimens examined. 1 ♀, Gyeonggi-do, Suwon-si, Jangan-gu, Sanggwanggyo-dong, Gwanggyosan Mt., 21 Apr. 1989 (JS Kim); 1 ♀, Jeollanam-do, Gwangyang-si, Gwangyang-eup, Baegunsan Mt., 26 Apr. 1994 (EG JO); 1 ♀, Gangwondo, Pyeongchang-gun, Doam-myeon, Balwangsan Mt., 23 Jul. 2000 (JH Seol); 1 ♀, Gangwon-do, Gangneung-si, Yeongok-myeon, durobang, 19 Aug. 2001 (JK Kim); 1 ♀, Chungchongbuk-do, Chungju, Angseong, Gukmang Mt., 22 Jul. 2007 (SP Han); 1 ♀, Gangwon-do, Yanggu-gun, Dongmyeon, Daeamsan Mt., 7 Aug. 2003 (JK Kim).

Distribution. Russian Far East, Korea (new record), Japan.

Key to the tribes, subtribes and genera of Korean Pemphredoninae

- 1. Forewing with three submarginal cells. Antennal sockets placed well above clypeal margin, usually near middle of face. Tribe *Psenini* 2
 - Forewing with at most two submarginal cells. Antennal sockets usually placed just above clypeal margin Tribe *Pemphredonini* 6
- 2. Hindwing media diverging at or beyond cu-a subtribe *Psenulina* *Psenulus*
 - Hindwing media diverging well before cu-a subtribe *Psenina* 3
- 3. Scrobal sulcus not deeply impressed; hypoepimeral area not well defined, usually more strongly punctate or ridged than median area of mesopleuron. Frontal carina short, not completely developed from midocellus to interantennal area *Mimesa*
 - Scrobal sulcus deeply impressed; hypoepimeral area usually smooth and bulging. Frontal carina usually complete from midocellus to interantennal area 4
- 4. Omaulus continued to midventer by an acetabular carina 5
 - Omaulus not continued to midventer by an acetabular carina *Psen*

- 5. Petiole carinate or posteriorly sulcate above, with conspicuous outwardly directed hairs along inside of latero-dorsal carina *Mimumesa*
 - Petiole polished above, without carinae and obvious grooves (at most with inconspicuous groove) and outwardly directed hairs on corresponding area *Pseneo*
- 6. Forewing with one recurrent vein and two discoidal cells. Stigma large, often approaching or surpassing marginal cell in size. Metasomal sternum II laterally with microsetal or micropore fields subtribe *Stigmina* 7
 - Forewing with two recurrent veins and three discoidal cells. Stigma small to moderate, in any case smaller than marginal cell. Metasomal sternum II without microsetal or micropore fields subtribe *Pemphredonina* 9
- 7. Submedian cell of hind wing reduced, cu-a positioned about halfway from wing base to origin of media *Carinostigmus*
 - Submedian cell of hind wing not reduced, cu-a positioned near origin of media 8
- 8. Frontal tubercule absent, at most with trace of tubercle. Eyes margined by simple narrow sulcus. Petiol carinate and reticulate *Stigmus*
 - Acute frontal tubercule present. Eyes margined by foveolate broad sulcus. Petiol largely smooth, at most a pair of submedian longitudinal carina *Tzustigmus*
- 9. Episternal sulcus well developed, extending from subalar fossa to hypersternaulus and beyond; hypersternaulus horizontal. Apical margin of labrum rounded. Mandible with two or three teeth. Female without pygidial plate. Female hindtibia without a series of spines along posterior margin 10
 - Episternal sulcus incomplete, not evident between subalar fossa and hypersternaulus; hypersternaulus rising obliquely posteriad. Apical margin of labrum broadly emarginate, notched or truncate. Mandible with two to six teeth. Female with pygidial plate. Female hindtibia often with a series of spines along posterior margin 11
- 10. Inner orbits nearly parallel, or at least not converging strongly below. Gena without long, erect setae ventrally. Omaulus rarely present. Mid flagellar segments longer than broad *Passaloecus*
 - Inner orbits converging strongly below. Gena with scattered long, erect setae ventrally. Omaulus present. Mid flagellar segments broader than long *Polemistus*
- 11. Abdomen, in dorsal view, with petiole longer than broad. Apical margin of labrum almost truncate (at most sometimes weakly notched) *Pemphredon*
 - Abdomen, in dorsal view, with petiole broader than long. Apical margin of labrum emarginate *Diodontus*

Checklist of valid Korean species of the Subfamily Pemphredoninae

- ¹*Family Crabronidae
- ²*Subfamily Pemphredoninae
- ³*Tribe Psenini
- ⁴*Subtribe Psenina
- ⁵*Genus *Psenulus* Kohl

Psenulus Kohl, 1897: 293. Type species: *Mimesa fuscipennis* Dahlbom [= *Psen fuscipennis* Dahlbom, 1843], designated by Ashmead, 1899: 224.

⁶**Psenulus anomoneurae* (Yasumatsu)

Nipponopsen anomoneurae Yasumatsu, 1938: 84, ♀ ♂, Yashirodani, Honshu, Japan (Fukuoka Univ.).
Psenulus anomoneurae (Yasumatsu): Dollfuss, 2004: 111.

Distribution. Russian Far East, (North) Korea, Japan.

⁷**Psenulus fuscipennis japonicus* Tsuneki

Psenulus fuscipennis japonicus Tsuneki, 1959: 38, ♀ ♂ (Syntypes), Keijo, Korea (Mus. Nat. Hum. Activ. Hygyo); Tsuneki, 1982a: 15.

Distribution. Korea, Japan.

⁸**Psenulus laevigatus* (Schenck)

Psen laevigatus Schenck, 1857: 215, ♀, Weilburg, Hessen, Germany (depository uncertain).
Psenulus laevigatus (Schenck): Tsuneki, 1974: 367; Tsuneki, 1982a: 15; Tsuneki, 1991: 200.

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

⁹**Psenulus nipponensis* Yasumatsu

Psenulus nipponensis Yasumatsu, 1942: 96, ♀, Minoo in Settu, Honshu, Japan (Kyushu Univ.), [Paratype also from North Korea]; Tsuneki, 1959: 35; Tsuneki, 1982b: 15.

Distribution. Korea, Japan.

¹⁰**Psenulus pallipes gussakovskij* Lith

Psenulus puncticeps Gussakovskij, 1932: 6, ♀ (Syntypes), Kursk Tomsk, Kamchatka or Ussuri area (Stockholm) [Junior secondary homonym of *Psenulus puncticeps* (Cameron, 1907)].

Psenulus pallipes puncticeps Gussakovskij: Tsuneki, 1959:

28; Tsuneki, 1959: 29 (in key); Tsuneki, 1959: 41.

Psenulus gussakovskij Lith, 1973: 116 [Substitute name for *Psenulus puncticeps* Gussakovskij, 1932].

Psenulus pallipes gussakovskiji Lith: Tsuneki, 1974: 367; Tsuneki, 1982a: 15; Tsuneki, 1991: 200.

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

¹¹*Genus *Mimesa* Shuckard

Mimesa Shuckard, 1937: 228. Type species: “*Psen equestris* F.” [= *Psen equestris* of Latreille, 1819 = *Trypoxylon equestre* Fabricius, 1804], by original designation.

¹²**Mimesa equestris* (Fabricius)

Trypoxylon equestre Fabricius, 1804: 182, sex not indicated, no specific locality of Germany (Zoological Museum, Copenhagen, Denmark).

Psen equestris (Fabricius): Panzer, 1806: 110 (new combination); Tsuneki, 1982a: 19.

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

¹³**Mimesa lutarius* (Fabricius)

Sphex lutarius Fabricius, 1787: 273, (ion), ♀ (Lectotype, designated by Vecht, 1961: 27), Kiliae (now Kiel), Germany (Zoological Museum, Copenhagen, Denmark) [= *lutaria*, incorrect original termination].

Mimesa lutarius (Fabricius): Burdys, 1995: 389-390 (in key).

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

¹⁴*Genus *Psen* Latreille

Psen Latreille, 1796: 122 (no included species). Type species: *Sphex ater* Fabricius, 1794 [= *Crabro ater* Olivier, 1792], designated by Latreille, 1802: 338 (first included species).

¹⁵**Psen affinis* Gussakovskij

Psen affinis Gussakovskij, 1937: 652, ♀, Primorskiy Kray, Maikhinsk forestry station, Russia (depository uncertain); Budrys, 1986: 145; Tsuneki, 1959: 50 (in key); Kim, 1970: 596; Burdrys, 1995: 394 (in key); Budrys, 2000: 64.

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

¹⁶**Psen ater* (Olivier)

Crabro ater Olivier, 1792: 517, ♀ (Neotype, designated by

¹*은주둥이벌과, ²*진딧물벌아과, ³*떡꼬마구멍벌속 (신칭), ⁴*떡꼬마구멍벌아족 (신칭), ⁵*꼬리떡꼬마구멍벌속 (신칭), ⁶*북방꼬리떡꼬마구멍벌 (신칭), ⁷*꼬리떡꼬마구멍벌, ⁸*검정다리꼬마구멍벌, ⁹*일본꼬마구멍벌, ¹⁰*극동꼬마구멍벌, ¹¹*큰꼬마구멍벌속 (신칭), ¹²*붉은띠큰꼬마구멍벌 (신칭), ¹³*큰꼬마구멍벌 (신칭), ¹⁴*떡꼬마구멍벌속, ¹⁵*구사코브스키꼬마구멍벌, ¹⁶*떡꼬마구멍벌

Leclercq, 1974b: 259), Yvelines, Feucherolles, France (Mus. Nat. d'Hist. Naturelle, Paris).

Psen ater (Oliver): kim, 1970; 596 [incorrectly designate author as Fabricius]; Tsuneki, 1982a: 3, 15; Burdys, 1995: 392 (in key).

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

¹Psen aurifrons* Tsuneki**

Psen aurifrons Tsuneki, 1959: 63, ♀ ♂, Sabaé Prefecture, Fukui, Japan (Mus. Nat. Hum. Activ. Hygyo); Tsuneki, 1974: 366; Tsuneki, 1982a: 15; Tsuneki, 1991: 200.

Distribution. Russia, China, Korea, Japan.

²Psen koreanus* Tsuneki**

Psen koreanus Tsuneki, 1959: 73, ♀, Keijo, Korea (Smithsonian Inst., Washington, D.C.); Kim, 1970; 596-597; Tsuneki, 1982a: 15; Burdys, 1995: 393 (in key).

Distribution. Russian Far East, Korea, Japan.

³Psen seminitidus* Lith**

Mimesa kohli Gussakovskij, 1934a: 7, ♀, Affluent of Mekong, River Chok-Chyu, Tibet, China (Zoological Institute, Russian Academy of Sciences, St. Petersburg) [Junior secondary homonym of *Psen kohli* Fox, 1898].

Psen seminitidus Lith, 1965: 40 [Substitute name for *Psen kohli* (Gussakovskij, 1934)]; Budrys, 1995: 393 (in key).

Psen takanensis Lith: Tsuneki, 1982a: 3; Tsuneki, 1982a: 15; Burdys, 1986: 145 [Synonymized with *Psen seminitidus* Lith].

Psen hakusanus Tsuneki, 1959: 72; Tsuneki, 1977: 366; Tsuneki, 1959: 50, 52 (in key); Budrys, 2000: 65 [corrected to *Psen seminitidus* Lith].

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

⁴Psen ussuriensis* Lith**

Mimesa orientalis Gussakovskij, 1932, ♂ (syntype), Primorskiy Kray, Sutshan and Tigrovaya (Stockholm) [Junior secondary homonym of *Psen orientalis* Cameron, 1890].

Psen ussuriensis Lith, 1959: 59 [Substitute name for *Psen orientalis* (Gussakovskij)]; Kim and Yang, 2010, this study.

Distribution. Russian Far East, Korea, Japan.

⁵*Genus *Mimumesa* Malloch

Mimumesa Malloch, 1933: 16. Type species: *Psen niger* Packard, 1867, by original designation.

⁶Mimumesa atratina* (Morawitz)**

Mimesa atratina Morawitz, 1891: 206, ♂, Bogdosan, Kazakhstan (Zool. Inst. Aca. Sci., St. Petersburg).

Psen atratinus longulus (Morawitz): Tsuneki, 1964: 10 (new subspecific combination); Tsuneki, 1974: 366; Tsuneki, 1982a: 15; Tsuneki, 1991: 200.

Mimumesa atratina (Morawitz): Burdys, 1995: 390 (in key).

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

⁷Mimumesa dahlbomi* (Wesmael)**

Mimesa dahlbomi Wesmael, 1852: 271. ♀ ♂ (Lectotype, designated by Lith, 1949: 139), Bruxelles area, Belgium (Inst. Roy. Sci. Nat. Bruxelles) [as *Dahlbomi*, incorrect original capitalization].

Pesn dahlbomi (Wesmael): Tsuneki, 1974: 366; Tsuneki, 1982a: 15; Tsuneki, 1991: 200.

Mimumesa dahlbomi (Wesmael): Burdys, 1995: 390 (in key).

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

⁸Mimumesa littoralis* (Bondroit)**

Mimesa littoralis Bondroit, 1934: 61, 64, and 65, ♀ ♂ (Lectotype, designated by Leclercq, 1974a: 194), Ostende, Belgium (Inst. Roy. Sci. Nat. Bruxelles).

Psen (Mimumesa) littoralis (Bondroit): Tsuneki, 1959: 49 (in key), 51 (in key), 56-59; Tsuneki, 1974: 366; Tsuneki, 1982a:15; Tsuneki, 1991: 200.

Mimumesa littoralis (Bondroit): Burdys, 1995: 391.

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

⁹*Genus *Pseneo* Malloch

Pseneo Malloch, 1933: 7. Type species: *Psen kohlii* Fox, 1898, by original designation.

¹⁰Pseneo exaratus* (Eversmann)**

Mimesa exarata Eversmann, 1849: 361, sex not indicated, Kazan area, Russia (Zool. Inst. Aca. Sci., St. Petersburg).

Psen exaratus (Everamann): Yasumatsu, 1942: 94; Tsuneki, 1959: 49; Tsuneki, 1959: 52 (in key); Tsuneki, 1959: 69;

¹*누런얼굴꼬마구멍벌, ²*고려꼬마구멍벌, ³*광채꼬마구멍벌 (신칭), ⁴*우수리꼬마구멍벌 (신칭), ⁵*어리꼬마구멍벌속 (신칭), ⁶*어리꼬마구멍벌 (신칭), ⁷*달복꼬마구멍벌, ⁸*해변어리꼬마구멍벌 (신칭), ⁹*러시아꼬마구멍벌속 (신칭), ¹⁰*러시아꼬마구멍벌

Kim, 1970: 596; Tsuneki, 1974: 366; Tsuneki, 1982a: 15; Tsuneki, 1991: 200.

Pseono exaratus (Evermann): Budrys, 1988: 108 (new combination); Budrys, 1995: 391 (in key).

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

¹*Tribe Pemphredonini

²*Subtribe Stigmina

³***Genus *Carinostigmus* Tsuneki**

Carinostigmus Tsuneki, 1954: 3. Type species: *Stigmus congruus* Walker, 1860, by original designation.

⁴****Carinostigmus filippovi* (Gussakovskij)**

Stigmus filippovi Gussakovskij, 1934b: 83, ♀, Takao-san (60 km of Tokyo), Honshu, Japan, (Zool. Inst. Aca. Sci., St. Petersburg); Kim, 1970: 598.

Carinostigmus filippovi (Gussakovskij): Finnamore, 1995: 225 (New combination); Kim and Yang, 2009: 466-467.

Distribution. Korea, Japan.

⁵***Genus *Stigmus* Panzer**

Stigmus Panzer, 1804: 86. Type species: *Stigmus pendulus* Panzer, 1804, by monotypy.

⁶****Stigmus japonicas* Tsuneki**

Stigmus japonicus Tsuneki, 1954: 29, ♀, ♂ (♂=*Stigmus quadriceps*), Kyogoku-mura near Kucchian, Hokkaido, Japan (Mus. Nat. Hum. Activ. Hygyo); Kim and Yang, 2009: 468-469.

Distribution. Russian Far East, Korea, Japan.

⁷***Genus *Tzustigmus* Finnamore**

Tzustigmus Finnamore, 1995: 211. Type species: *Tzustigmus syam* Finnamore, 1995, original designation.

⁸****Tzustigmus rhinoceros* (Budrys)**

Tzustigmus rhinoceros Budrys 1987: 54, ♀, ♂, Levaya River, Khokhtsir Range Khabarovsk, Federation, Russian (Zool. Inst. Aca. Sci., St. Petersburg); Kim and Yang, 2009: 467-468.

Distribution. Russian Far East, Korea.

⁹*Subtribe Pemphredonina

¹⁰***Genus *Passaloecus* Shuckard**

Passaloecus Shuckard, 1837: 188. Type species: *Pemphredon insignis* Linden, 1829, by original designation.

¹¹****Passaloecus clypealis* Faester**

Passaloecus clypealis Faester, 1947: 204, ♀ ♂, Basnaes, Denmark (Zoological Museum, Copenhagen, Denmark); Tsuneki, 1974: 368; Tsuneki, 1991: 201; Burdrys, 1995: 403 (in key).

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

¹²****Passaloecus insignis* (Linden)**

Pemphredon insignis Linden, 1829: 81, ♀ ♂ (Syntypes), Bruxelles, Belgium (Inst. Roy. Sci. Nat. Belgique, Bruxelles).

Passaloecus shuckardi Yasumatsu, 1934a: 36, ♀, Kongôsan, Kôgendo, Korea (depository uncertain); Yasumatsu, 1934b: 113 [Synonymized with *Passaloecus monilicornis* var. *dahlbomi*]; Yarrow, 1970: 178 [corrected to *Passaloecus insignis* (Linden)].

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

¹³****Passaloecus koreanus* Tsuneki**

Passaloecus annulatus koreanus Tsuneki, 1974: 368, ♀ ♂, Hyesan Province, Ryang-gang, Korea (Természettudományi Múzeum, Budapest, Hungary).

Passaloecus koreanus Tsuneki, 1982a: 15; Burdrys, 1995: 404 (in key).

Distribution. Far Eastern Russia, Korea, Japan.

¹⁴****Passaloecus monilicornis* Dahlbom**

Passaloecus monilicornis Dahlbom, 1842: 12, ♀ ♂ (Lectotype, designated by Yarrow, 1970: 169), Skansberget Kårböle, Helsingland, Sweden (Lund); Tsuneki, 1955: 3; Tsuneki, 1955: 5 (in key); kim, 1970: 598; Tsuneki, 1982a: 3; Tsuneki, 1982a: 14; Burdrys, 1995: 403 (in key).

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

Note. According to Pulawski (2010), this species may be a synonym or a northern subspecies of *insignis*. Also, he supposed that specimens recorded prior to Yarrow (1970) mostly referred to *Passaloecus insignis*.

¹*진딧물벌속, ²*호리꼬마구멍벌아족, ³*용골꼬마구멍벌속, ⁴*호리꼬마구멍벌, ⁵*호리꼬마구멍벌속, ⁶*왜꼬마구멍벌, ⁷*무소꼬마구멍벌속 (신칭), ⁸*무소꼬마구멍벌, ⁹*진딧물벌아족, ¹⁰*꼬마구멍벌속, ¹¹*이마방패꼬마구멍벌, ¹²*꼬마구멍벌, ¹³*한국꼬마구멍벌, ¹⁴*염주꼬마구멍벌

¹***Genus *Polemistus* Saussure**

Polemistus Saussure, 1892: 565. Type species: *Polemistus macilentus* Saussure, 1892, designated by Pate, 1937: 52.

²****Polemistus abnormis* (Kohl)**

Passaloecus abnormis Kohl, 1888: 726, ♀, Vipava, Slovenia (Naturhistorisches Museum, Wien, Austria); Tsuneki, 1955: 3; Tsuneki, 1955: 4 (in key); Tsuneki, 1955: 12.
Polemistus abnormis (Kohl): Bohart and Menke, 1976:185 (new combination, listed); Kim, 1970: 597; Tsuneki, 1982b: 14; Burdrys, 1995: 404 (in key).

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

³***Genus *Pemphredon* Latreille**

Pemphredon Latreille, 1796: 128 (no species included). Type species: *Pemphredon lugubris* (Fabricius, 1804) [= *Crabro lugubris* Fabricius, 1793], designated by Shuckard, 1837: 193 (one of the two species first included by Latreille, 1802: 342).

⁴****Pemphredon flavistigma* Thomson**

Pemphredon flavistigma Thomson, 1874: 192, ♀, Sällsynt, Småland, Sweden (Lund); Tsuneki, 1982a: 14.

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

⁵****Pemphredon inornata* Say**

Pemphredon inornata Say, 1824: 339, sex not indicated, Pennsylvania, USA (destroyed) [as *inornatus*, incorrect original termination]; Tsuneki, 1982a: 3, 14; Burdrys, 1995: 401 (in key).

Cemonus shuckardi Morawitz, 1864: 460, ♀ ♂ (syntype), Russia (lost) [as *Shuckardi*, incorrect original capitalization]; Lomholdt, 1975: 99 [Synonymized with *Pemphredon inornata* Say].

Pemphredon shuckardi (Morawitz): Kim, 1970: 598; Tsuneki, 1974: 368; Tsuneki, 1991: 201.

Distribution. Transpalearctic (Europe through Russia to Korea and Japan) and Neotropical (America and Canada).

⁶****Pemphredon japonica* Matsumura**

Pemphredon japonicum Matsumura, 1912: 179, ♀ (holotype or syntypes), Kyoto, Honshu, Japan (type depository uncertain, might be Hokkaido Univ.); Tsuneki, 1951: 174.

Pemphredon japonica Matsumura: Tsuneki, 1968: 50.

Distribution. Russian Far East, Korea, Japan.

⁷****Pemphredon koreana* Tsuneki**

Pemphredon koreana Tsuneki, 1951: 171-183 (in key), ♀, shoyozan, korea (Mus. Nat. Hum. Activ. Hygyo); Tsuneki, 1964: 28 (in key); Tsuneki, 1982a: 14; Burdrys, 1995: 400 (in key).

Distribution. Korea.

⁸****Pemphredon lethifer* (Shuckard)**

Cemonus lethifer Shuckard, 1837: 201, ♀ ♂ (Syntypes), Britain (W. Shuckard coll.).

Pemphredon lethifer (Shuckard): Tsuneki, 1974: 367; Tsuneki, 1982a: 14; Tsuneki, 1991: 201; Burdrys, 1995: 401 (in key).

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

⁹****Pemphredon lugubris* (Fabricius)**

Crabro lugubris Fabricius, 1793: 302, ♀ (Lectotype, designated by Vecht, 1961: 28), Halae Saxonum, now Sachsen-Anstalt, Halle Germany (Zoological Museum, Copenhagen, Denmark).

Pemphredon lugubris (Fabricius): Fabricius, 1804: 315 (new combination, redescription)

Pemphredon lugubris pacificus Tsuneki, 1974: 367; Tsuneki, 1982a: 14; Tsuneki, 1991: 201.

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

¹⁰****Pemphredon montana* Dahlbom**

Pemphredon montanus Dahlbom, 1845: 262, ♀ ♂ (Lectotype, designated by Dollfuss, 1995: 994), Faxälven, Sweden (Lund).

Pemphredon montana Dahlbom: Tsuneki, 1982a: 14.

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

¹¹****Pemphredon mortifer* Valkeila**

Pemphredon mortifer Valkeila in Valkeila and Leclercq, 1972: 697, ♀ ♂, St. Petersburg 75 km NW, Metsäpirtti, Isthmus, Karelian, Russia (Zool. Mus. Turku); Burdrys,

¹*병신꼬마구멍벌속 (신칭), ²*병신꼬마구멍벌, ³*진딧물벌속, ⁴*황무늬진딧물벌, ⁵*슈카아드진딧물벌, ⁶*왕진딧벌, ⁷*고려진딧물벌, ⁸*북방진딧물벌, ⁹*우수리진딧물벌, ¹⁰*진딧물벌, ¹¹*먹진딧물벌 (신칭)

1995: 402 (in key).

Distribution. Transpalearctic: Europe to Far Eastern Russia and Korea.

¹**Pemphredon rugifer* (Dahlbom)

Pemphredon rugifer Dahlbom, 1844: 256, ♀ ♂ (Lectotype, designated by Blüthgen, 1931).

Pemphredon rugifer wesmaeli (Dahlbom): Tsuneki, 1974: 367; Tsuneki, 1982a: 14; Tsuneki, 1991: 201.

Distribution. Transpalearctic: Europe through Russia to Korea and Japan.

²**Genus Diodontus* Curtis

Diodontus Curtis, 1834 (text for plate 496). Type species: *Pemphredon tristis* Linden, 1829, designated by International Commission on Zoological Nomenclature, Opinion 844, 1968: 10.

³**Diodontus chosenensis* Tsuneki

Diodontus chosenensis Tsuneki, 1974: 370, ♀, Hyesan, Province Ryang-gang, Korea (Természettudományi Múzeum, Budapest, Hungary); Tsuneki, 1982a: 14; Burdrys, 1995: 398 (in key).

Distribution. (North)Korea.

⁴**Diodontus minutus* Tsuneki

Diodontus minutus orientalis Tsuneki, 1974: 369, ♀, Hyesan, Province Ryang-gang, Korea (Természettudományi Múzeum, Budapest, Hungary); Tsuneki, 1982a: 14.

Distribution. (North)Korea.

ACKNOWLEDGEMENTS

This work was supported by the Eco-technopia 21 Project and the Survey of Indigenous Biological Resources of Korea Project, NIBR.

REFERENCES

Ashmead, W.H., 1899. Classification of the entomophilous wasps, or the superfamily Sphegoidea. *The Canadian Entomologist*, 31: 145-155, 161-174, 212-225, 238-251, 291-300, 322-330, 345-357.

Bondroit, J., 1934. Hyménoptères Sphégides récoltés en 1933 à

Bruxelles et à Ostende. *Annales de la Société Royale Zoologique de Belgique*, 64: 59-65.

Bohart, R.M. and A.S. Menke, 1976. Reply to Dr Krombein's comment on our proposal to suppress *Euplilis* Risso, 1826. *The Bulletin of Zoological Nomenclature*, 33: 68.

Budrys, E.R., 1986. Royushchiye osy roda Psen (Hymenoptera, Sphecidae) Dalnego Vostoka SSR. *In: Pereponchatokrylyie ostochnoi Sibiri i Dalnego Vostoka* (Eds., P.A. Lehr, S.A. Belokobylskiy and N.A. Storozheva). pp. 138-147. Akademiya Nauk SSR, Dalnevostochnyi Nauchnyi Tsentr, Biologo-Pochvennyi Institut, Vladivostok.

Budrys, E.R., 1987. Royushchiye osy rodov *Stigmus* Panzer i *Carinostigmus* Tsuneki (Hymenoptera, Sphecidae) Dalnego Vostoka SSSR. *In: Novye dannye po sistematike nasekomykh Dalnego Vostoka* (Eds., P.A. Lehr and N.A. Storozheva). pp. 49-56. Dalnevostochnoe Otdelenie Akademii Nauk SSSR, Biologo-Pochvennyi Institut, Vladivostok.

Budrys, E.R., 1988. Novyie i maloizvestnyie vidy royushchikh os triby Psenini (Hymenoptera, Sphecidae). *Trudy Vsesoyuznogo Éntomologicheskogo Obshchestva*, 70: 101-116.

Budrys, E.R., 1995. Nadsem. Sphecoidea. 67. Sem. Sphecidae - Royushchiye osy. *In: Opredelitel' nasekomykh Dal'nego Vostoka Rossii v shesti tomakh. Tom IV* (Ed., A.L. Lehr). pp. 368-480. Setchatokrylyie, skorpionnitsy, pereponchatokrylyie. Chast' 1. Nauka, Sankt-Peterburg

Budrys, E.R., 2000. Notes on the synonymy and distribution of Asiatic *Psen* Latr. and *Psenulus* Kohl (Hymenoptera, Sphecidae, Psenini). *Acta Zoologica Lituanica*, 10: 63-69.

Cameron, P., 1890. Hymenoptera Orientalis [*sic*], or contributions to a knowledge of the Hymenoptera of the Oriental Zoological Region. Part II. *Memoirs and Proceedings of the Manchester Literary and Philosophical Society*, 3: 239-284.

Cameron, P., 1907. Description of a new species of Crabronidae from Borneo. *The Entomologist*, 40: 283-284.

Curtis, J., 1824-1839. *British Entomology; being illustrations and descriptions of the genera of insects found in Great Britain and Ireland.* [According to Evenhuis, 1997, Each part contained 5 or (later) 4 plates with 2 unnumbered pages of text for each plate. The work was bound in 16 volumes, with 769 plates arranged serially]

Dahlbom, A.G., 1842. *Dispositio Methodica Specierum Scandinavicarum pertinentium ad Familias Insectorum Hymenopterorum Naturales Sphecidarum, Pompilidarum, Larridarum, Nyssonidarum, Pemphredonidarum, Crabronidarum, Mellinidarum et Bembicidarum.* Cujus Part. III. pp. 9-12.

Dahlbom, A.G., 1843-1845. *Hymenoptera Europaea praecipue borealia; formis typicis nonnullis Specierum Generumve Exoticorum aut Extraneorum propter nexum systematicum associatis; per Familias, Genera, Species et Varietates disposita atque descripta.* Tomus: *Sphex* in sensu Linneano. Officina Lundbergiana, Lund.

Dollfuss, H., 1995. A worldwide revision of *Pemphredon* Latreille 1796 (Hymenoptera, Sphecidae). *Linzer Biologische*

¹*단색진딧물벌, ²*조선꼬마구멍벌속(신칭), ³*조선꼬마구멍벌, ⁴*동양꼬마구멍벌

- Beiträge 27: 905-1019.
- Dollfuss, H., 2004. The Pemphredoninae wasps of "Biologiezentrum Linz" collection in Linz, Austria (Hymenoptera, Apoidea, Crabronidae). *Linzer Biologische Beiträge*, 36: 105-129.
- Eversmann, E., 1849. Fauna Hymenopterologica Volgo-Uralensis. Fam. III. Sphegidae Latr. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 22: 359-436.
- Fabricius, J.C., 1787. *Mantissa Insectorum sistens eorum species nuper detectas adiectis characteribus genericis, differentiis specificis, emendationibus, observationibus*, Vol. 1. Christ. Gottl. Proft, Hafniae [=Copenhagen]. I-XX, 1-348 pp.
- Fabricius, J.C., 1793. *Entomologia systematica emendata et aucta. Secundum classes, ordines, genera, species adiectis synonymis, locis, observationibus, descriptionibus*. Vol. 2. Christ. Gottl. Proft, Hafniae [=Copenhagen]. VIII+519 pp.
- Fabricius, J.C., 1794. *Entomologia systematica emendata et aucta. Secundum classes, ordines, genera, species adiectis synonymis, locis, observationibus, descriptionibus*. Vol. 4, C.G. Proft, Hafniae [=Copenhagen], VIII+472+5 unnumbered pp. [described *Bicyrtes spinosa* and *Cerceris aurita* in Appendix specierum nuper detectarum, pp. 435-462] Gussakovskij, V.V (1932) Verzeichnis der von Herrn D: r R. Malaise im Ussuri und Kamtschatka gesammelten aculeaten Hymenopteren. *Arkiv för Zoologi*, 24A(10): 1-66.
- Fabricius, J.C., 1804. *Systema Piezatorum secundum ordines, genera, species adiectis synonymis, locis, observationibus, descriptionibus*. Carolum Reichard, Brunsvigae [=Braunschweig]. I-XIV, 15-440, 1-30 pp.
- Faester, K., 1947. Une nouvelle espèce du genre *Passaloecus* Shuck. (Hym. Spheg.). *Entomologiske Meddelelser*, 25: 204-205.
- Finnamore, A.T. and C.D. Michener, 1993. Superfamily Apoidea. *In: Hymenoptera of the world: An identification guide to families* (Eds., H. Goulet and J.T. Huber). pp. 279-357. Canada communication Group, Ottawa, Canada.
- Finnamore, A.T., 1995. Revision of the world genera of the subtribe Stigmia Hymenoptera: Apoidea: phecidae: Pemphredoninae), Part 1. *Journal of Hymenoptera Research*, 4: 204-284.
- Fox, W.J., 1898. The species of *Psen* inhabiting America north of Mexico. *Transactions of the American Entomological Society*, 25: 1-18.
- Gussakovskij, V.V., 1932. Verzeichnis der von Herrn D:r R. Malaise im Ussuri und Kamtschatka gesammelten culeaten Hymenopteren. *Arkiv för Zoologi*, 24A(10): 1-66
- Gussakovskij, V.V., 1934a. Schwedisch-chinesische wissenschaftliche Expedition nach den nordwestlichen Provinzen Chinas, unter Leitung von Dr. Sven Hedin und Prof. Sü Ping-chang. Insekten gesammelt vom schwedischen Arzt der Expedition Dr. David Hummel. 41. Hymenoptera, 6. Sphegidae. *Arkiv för Zoologi*, 27A, No. 21: 1-15.
- Gussakovskij, V.V., 1934b. Beitrag zur Kenntnis der Pseninen- und Pemphredoninen-Fauna Japans (Hymenoptera, Sphecidae). *Mushi*, 7: 79-89.
- Gussakovskij, V.V., 1937. Obzor palearkticheskikh vidov rodov *Didineis* Wesm., *Pison* Latr. i *Psen* Latr. (Hymenoptera Sphecidea)-Espèces paléarctiques des genres *Didineis* Wesm., *Pison* Latr. et *Psen* Latr. (Hymenoptera Sphecidea). *Trudy Zoologicheskogo Instituta Akademii Nauk SSSR*, 4: 599-698.
- International Commission On Zoological Nomenclature, 1968. *Diodontus* Curtis, 1834 (Insecta, Hymenoptera): designation of a type species under the plenary powers. *The Bulletin of Zoological Nomenclature*, 25: 10-11.
- Kim, C.W., 1970. *Illustrated encyclopedia of fauna and flora of Korea*, Vol. 11. Insecta (III). Samhwa, Seoul, pp. 1-891.
- Kim, J.K. and H.W. Yang, 2009. Korean Species of the Subtribe Stigmia (Hymenoptera: Crabronidae: Pemphredoninae). *Animal Cells and Systems*, 13: 465-469.
- Kohl, F.F., 1888. Zur Hymenopterenfauna Tirols. *Verhandlungen der kaiserlich-königlichen Zoologisch-Botanischen Gesellschaft in Wien*, 38: 719-734.
- Kohl, F.F., 1897. Die Gattungen der Sphegiden. *Annalen des k.k. Naturhistorischen Hofmuseums*, 11: 233-516.
- Latreille, P.A., 1796. *Précis des caractères génériques des Insectes, disposés dans un ordre naturel*. F. Bourdeaux, Paris et Brive, I-XIV+ pp. 1-201.
- Latreille, P.A., 1802. *Histoire naturelle générale et particulière des Crustacés et des Insectes. Ouvrage faisant suite à l'Histoire Naturelle générale et particulière, composée par Lercq de Buffon, et rédigée par C.S. Sonnini, membre de plusieurs Sociétés savantes*. Vol. 3. Imprimerie F. Dufart, Paris, I-XII+ pp. 13-467.
- Leclercq, J., 1972. Crabroniens exotique du genre *Lestica* (*Solenius*) (Hymenoptera Sphecidae Crabroninae). *Bulletin de la Société Royale des Sciences de Liège*, 41: 677-685.
- Leclercq, J., 1974a. Données pour un atlas des Hyménoptères de l'Europe occidentale. XII. Famille des Sphecidae, sous-famille des Pemphredoninae (sauf *Pemphredon*). *Bulletin des Recherches Agronomiques de Gembloux (Nouvelle Série)*, 7: 191-222.
- Leclercq, J., 1974b. Noms, types et néotypes d'une trentaine de Crabroniens européens (Hymenoptera Sphecidae). *Bulletin and Annales de la Société Royale Belge d'Entomologie*, 110: 258-286.
- Lomholdt, O., 1975-1976. The Sphecidae (Hymenoptera) of Fennoscandia and Denmark. *In Fauna Entomologica Scandinavica*. 4., Scandinavian Science Press, Klampenborg, Denmark, part 1: 1-224 (1 Dec.1975), part 2: 225-452 (1 Sept. 1976).
- Malloch, J.R., 1933. Review of the wasps of the subfamily Pseninae of North America (Hymenoptera: Aculeata). *Proceedings of the United States National Museum*, 82(26): 1-60.
- Matsumura, S., 1912. *Thousand insects of Japan*. Supplement IV. Keiseisha, Tokyo, pp. 1-247.
- Morawitz, A., 1864. Verzeichniss der um St.-Petersburg aufgefundenen Crabroninen. *Bulletin de l'Académie Impériale des Sciences de St.-Pétersbourg*, 7: 451-465.
- Morawitz, F., 1891. Ueber Astrachan'sche Fossorien. *Horae*

- Societatis Entomologicae Rossicae, 25: 175-233.
- Olivier, A.G., 1792. Frélon, *Crabro*. In: Encyclopédie méthodique (Ed. A.G. Olivier). pp. 506-519. Histoire Naturelle. Insectes. Vol. 6. Panckoucke, Paris.
- O'Neill, K.M., 2001. Solitary wasps. Behavior and natural history. Comstock Publishing Associates, Ithaca and London, pp. 1-406.
- Packard, A.S., 1866-1867. Revision of the fossorial Hymenoptera of North America. I. Crabronidae and Nyssonidae. Proceedings of the Entomological Society of Philadelphia, 6: 39-115, 353-444.
- Panzer, G.W.F., 1804. Fauna Insectorum Germaninae Intiae oder Deutschlands Insekten. Heft 86. Nürnberg.
- Panzer, G.W.F., 1806. Entomologischer Versuch die Jürineschen Gattungen der Linnéschen Hymenopteren nach dem Fabriciusschen System zu prüfen im Bezug auf die in der deutschen Insektenfauna bekannt gemachten Gattungen und Arten dieser Klasse - Kritische Revision der Insektenfauna Deutschlands nach dem System bearbeitet. Baendchen. Felsenkessersche Buchhandlung, Nürnberg. pp. 270.
- Pate, V.S.L., 1937. The generic names of the sphecoid wasps and their type species (Hymenoptera: Aculeata). Memoirs of the American Entomological Society, 9: 1-103.
- Pulawski, W.J., Catalog of Sphecidae sensu lato (=Apoidea excluding Apidae). <http://research.calacademy.org>.
- Saussure, H., 1890-1892. Histoire physique, naturelle et politique de Madagascar publiée par Alfred Grandidier. Volume XX. Histoire naturelle des Hyménoptères. Imprimerie Nationale, Paris, XXI+590 pp., pls. 1-27 (1890: I-XXI, 1-176, pls. 1-20; 1892: 177-590, pls. 21-27).
- Say, T., 1824. Appendix. Part. I. - Natural history. and I. Zoology. In: W. H. Keating. Narrative of an expedition to the source of St. Peter's River, Lake Winne peek, Lake of the Woods, performed in the year 1823 by order of the Hon. J.C. Calhoun, Secretary of War under the command of Stephen H. Long, Major U.S.T.E. Volume II. H.C. Carey & I. Lea, Philadelphia, pp. 253-378.
- Schenck, A., 1857. Beschreibung der in Nassau aufgefundenen Grabwespen. Jahrbücher des Vereins für Naturkunde im Herzogthum Nassau, 12: 1-340.
- Shuckard, W.E., 1837. Essay on the indigenous fossorial Hymenoptera; comprising a description of all the British species of burrowing sand wasps contained in the metropolitan collections; with their habits as far as they have been observed. Richter and Co., London, pp. 1-252.
- Thomson, C.G., 1874. Skandinavien Hymenoptera, vol. 3, part 2 *Mutilla* och *Sphexi*, Lund. pp. 99-295.
- Tsuneki, K., 1951. The genus *Pemphredon* Latreille of Japan and the adjacent regions (Hymenoptera, Pemphredonidae). Journal of the Faculty of Sciences, Hokkaido Imperial University (Series VI, Zoology), 10: 163-208.
- Tsuneki, K., 1955. The genus *Passaloecus* Shuckard of Japan, with ethological observations on some species (Hymenoptera, Sphecidae, Pemphredoninae). Memoirs of the Faculty of Liberal Arts, Fukui University (Series II, Natural Science), 5: 1-21.
- Tsuneki, K., 1959. Contributions to the knowledge of the Cleptinae and Pseninae Faunae of Japan and Korea (Hymenoptera, Chrysididae and Sphecidae). Memoirs of the Faculty of Liberal Arts, Fukui University (Series II, Natural Science), 9: 1-78.
- Tsuneki, K., 1964. A guide to the study of the Japanese Hymenoptera (19). (7). Pemphredoninae. (3) The genus *Pemphredon* Latreille, 1796. The Life Study (Fukui), 8: 27-30.
- Tsuneki, K., 1968. Some Hymenoptera from Quelquepart Island, South Korea. The Life Study (Fukui), 12: 49-54.
- Tsuneki, K., 1974. Sphecidae (Hymenoptera) from Korea. Annales Historico-Naturales Musei Nationalis Hungarici, 66: 359-387.
- Tsuneki, K., 1977. Recombination of sexes among four species of *Psen* (Hymenoptera, Sphecidae) occurring in Japan. Kontyû, 45: 360-371.
- Tsuneki, K., 1982a. Sphecidae from North Korea (II) with the list of the species of the family known from the Korean Peninsula (Hymenoptera). Special Publications of the Japan Hymenopterists Association, 20: 1-22.
- Tsuneki, K., 1982b. A referenced list of the species of Sphecidae, Chrysididae, Scoliidae and Mutillidae hitherto known from the Ryukyu Archipelago, with the distribution table. Special Publications of the Japan Hymenopterists Association, 23: 53-77.
- Tsuneki, K., 1991. Sphecidae (Hymenoptera) from Korea. Insecta Koreana, 2: 198-203.
- van der Linden, P.L., 1829. Observations sur les Hyménoptères d'Europe de la famille de Fouisseurs, deuxième partie, Bembecides, Larrates, Nyssonien et Crabronites. Nouvelles Mémoires de l'Académie Royale des Sciences et Belles Lettres de Bruxelles, 5: 11-125.
- van der Vecht, J., 1961. Hymenoptera Sphecoidea Fabriciana. Zoologische Verhandelingen, 48: 1-85.
- van Lith, J.P., 1949. Le sous-genre *Psen Mimumesa* Malloch (Hym. Sphec.). Tijdschrift voor Entomologie, 91: 135-148.
- van Lith, J.P., 1959. Contribution to the knowledge of the Indo-Australian Pseninae (Hymenoptera, Sphecidae). Part I. Genus *Psen* Latreille. Zoologische Verhandelingen, 39: 1-69.
- van Lith, J.P., 1965. Contribution to the knowledge of the Indo-Australian Psenini (Hymenoptera, Sphecidae). Part III. New species of the subgenera *Psen* Latreille and *Mimumesa* Malloch and a review of East-Asiatic and Indo-Australian *Psen* Latreille, s.l. Zoologische Verhandelingen, 73: 1-80.
- van Lith, J.P., 1973. Notes on palaeartic Psenini (Hymenoptera, Sphecidae). Entomologische Berichten, 33: 113-119.
- Walker, F., 1858-1860. Characters of some apparently undescribed Ceylon insects. The Annals and Magazine of Natural History (Third Series), 2: 202-209, 280-286 (1858); 3: 50-56, 258-265 (1859); 4: 370-376 (1859); 5: 304-311 (1860); 6: 357-360 (1860).
- Wesmael, C., 1852. Revue critique des Hyménoptères Fouisseurs de Belgique. Suite. Bulletin de l'Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique, 19: 82-

- 110, 261-286, 589-635.
- Yamane, S., 1999. Sphecidae. *In*: Identification guide to the Aculeata of the Nansei Islands, Japan (Eds., S. Yamane, S.I. Kudome and M. Terayamd). pp. 466-548. Hokkaido University Press, Sapporo,
- Yarrow, I.H.H., 1970. Some nomenclatorial problems in the genus *Passaloecus* Shuckard and two species not before recognized as British (Hym. Sphecidae). *Entomologist's Gazette*, 21: 167-189.
- Yasumatsu, K., 1934a. A new species of the genus *Passaloecus* from Japan and Corea (Hymenoptera, Pemphredonidae). *Mushi*, 7: 36-40, pl. 4.
- Yasumatsu, K., 1934b. Notes on the genus *Passaloecus* Shuckard (Hymenoptera, Pemphredonidae). *Mushi*, 7: 109-114.
- Yasumatsu, K., 1938. Two new wasps from Japan (Eumenidae and Pemphredonidae). *Mushi*, 11: 83-86.
- Yasumatsu, K., 1942. Sur quelques formes nouvelles ou peu connues des Psenini en Extrême-Orient (Hym., Sphecoidea). *Mushi*, 14: 93-97.

Received June 18, 2010

Accepted July 8, 2010