

# Contribution to the Knowledge of the Tribe Alyssontini Dalla Torre (Hymenoptera: Crabronidae: Bembicinae) of the Korean Peninsula

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## ABSTRACT

With the discovery of *Didineis sibirica* and *Alysson monticola* in South Korea, the tribe Alyssontini Dalla Torre of the Korean Peninsula is supplemented. The genus *Didineis* Wesmael is reported for the first time in the Korean Peninsula. It is easily separated by the following combination of characteristics from the genus *Alysson*, another member of Alyssontini occurring in the Far East. In both sexes, fore wing media diverging much before cu-a; metapleuron much less half as long as high; metasomal tergum 2 without pale spots. In males, the last antennal segment is strongly incurved and opposed by a projection from antennal segment 12. *Alysson monticola* is also new to Korea. Of the Far Eastern species with triangular propodeal enclosure, this species is unique with extended inter-antennal marking. In this study, list of all the known Korean species of the tribe, diagnostic characteristics and digital images are provided.

**Keywords:** taxonomy, *Alysson*, *Didineis*, Bembicinae, Korea

## INTRODUCTION

The tribe Alyssontini Dalla Torre, 1897 is the second smallest monophyletic group of Bembicinae (Hymenoptera: Apoidea: Crabronidae), and comprises approximately 64 worldwide species belonging to three genera, i.e. *Alysson* Panzer, *Analysson* Kromvein, and *Didineis* Wesmael (Nemkov and Lelej, 2013; Pulawski, 2019). In the Korean Peninsula, it has been represented by two species of sole genus, specifically *Alysson pertheesi* Gorski, 1852 and *A. ratzeburgi* Dahlbom, 1843 based on two specimens from North Korea (refer to Kim, 2014). Thus, nothing has been known about South Korean fauna of the tribe.

Failing to find those two species in South Korea despite their broad distribution in the Far East (for details, see distribution below of each species), the author recently discovered other two Alyssontini species in South Korea, specifically *Didineis sibirica* Gussakovski and *Alysson monticola* Tsuneki.

In this study, including newly found two species, the tribe Alyssontini occurring in the Korean Peninsula is reviewed. A total of four species is listed with diagnostic characters and digital images.

## MATERIALS AND METHODS

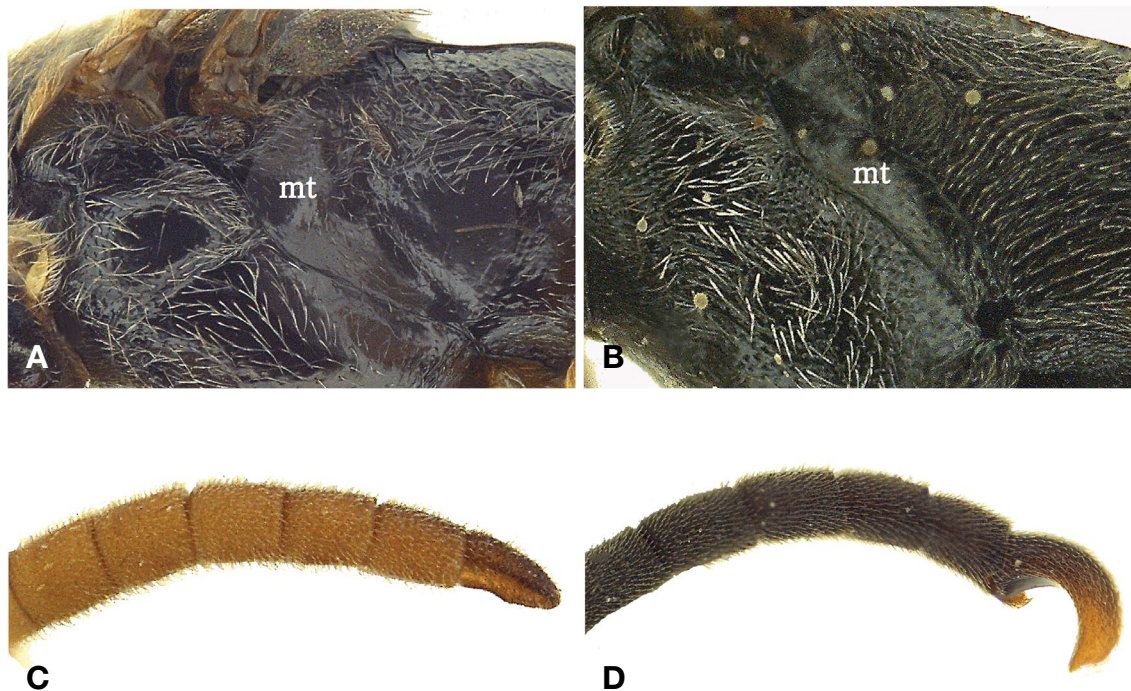
Terminology of external features follow Bohart and Menke (1976) and Nemkov and Lelej (2013).

Specimens treated herein will be deposited in National Institute of Biological Resources (NIBR), Incheon, Korea.

Abbreviations is used for type depositories as follows: MNHAH, Museum of Nature and Human Activities, Hyogo; ZIN, Zoological Institute, St. Petersburg, Russia; ZMHU, Museum für Naturkunde, Humboldt University, Berlin, Germany. Ones for provincial names of Korean localities: GB, Gyeongsangbuk-do; GN, Gyeongsangnam-do; GW, Gangwon-do; JB, Jeonlanam-do; PN, Pyeopngannam-do; RG, Ryanggang-do.

## SYSTEMATIC ACCOUNTS

Order Hymenoptera Linnaeus, 1758  
Family Crabronidae Latreille, 1802  
Subfamily Bembicinae Latreille, 1802  
Tribe Alyssontini Dalla Torre, 1897



**Fig. 1.** Selective characteristics of the genera *Alysson* and *Didineis*. A, *Alysson monticola*, lateral side of mesosoma; B, *Didineis sibirica*, lateral side of mesosoma; C, *Alysson monticola*, male flagellomeres 8-13; D, *Didineis sibirica*, male flagellomeres 8-13. mt, metapleuron.

**Key to the genera of the tribe Alyssontini occurring in the Korean Peninsula**

(corresponding to upper item of couplet 24 of the key in Kim, 2015: 225)

- 1. In both sexes, fore wing media diverging beyond cu-a or very near it (Fig. 2A, in shade circle); metapleuron (mp in Fig. 1A) about half as long as high; metasomal tergum 2 with a pale spot in each sub-lateral mid part (Fig. 2B). In male, last antennal segment weakly incurved, antennal segment 12 simple without apical projection opposed to last segment (Fig. 1C) ..... *Alysson* Panzer
- In both sexes, fore wing media diverging much before cu-a (Fig. 3D, in shade circle); metapleuron much less half as long as high (Fig. 1B); metasomal tergum 2 without spots (Fig. 3D). In male, last antennal segment strongly incurved and opposed by a projection from antennal segment 12 (Fig. 1D) ..... *Didineis* Wesmael

<sup>1</sup>\* **Genus *Alysson* Panzer, 1806**

*Alysson* Panzer, 1806: 169. Type species: *Pompilus spinosus* Panzer, 1801, designated by Morice and Durrant, 1915: 406.

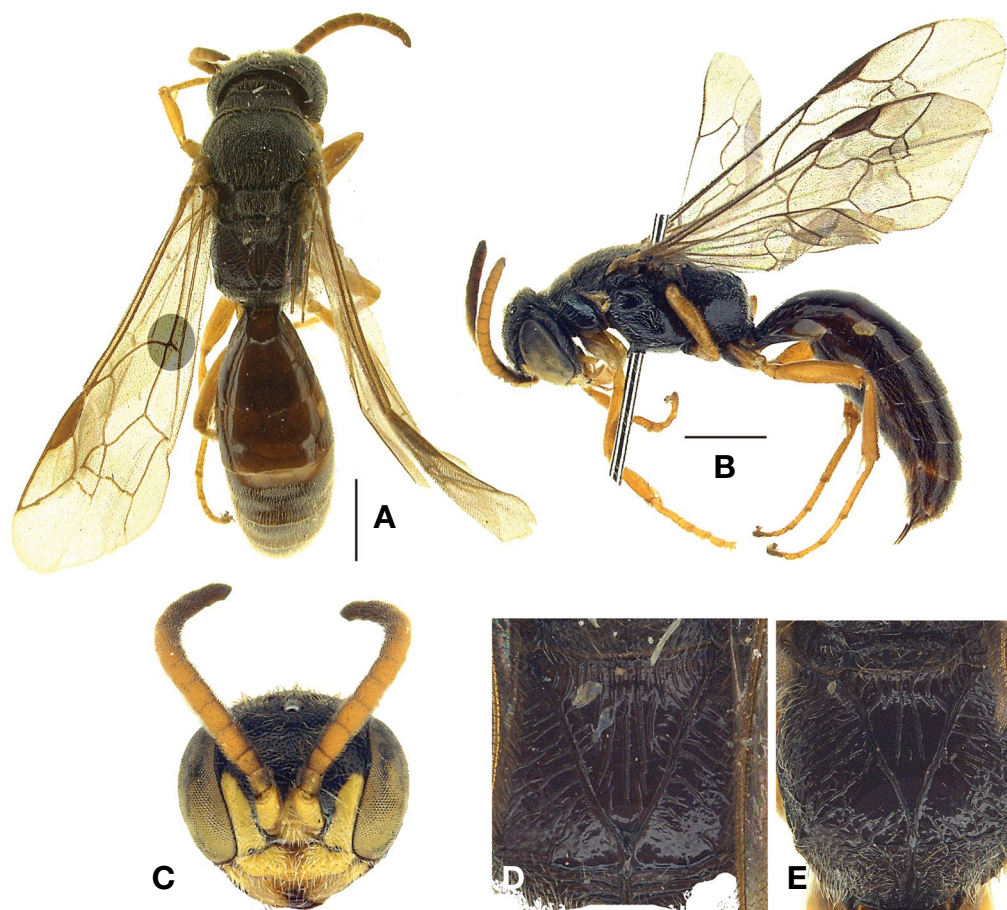
**Notes.** Including *A. monticola* first reported herein, three species are recognized in the Korean Peninsula as listed below. Amongst them, both sexes of *Alysson pertheesi* is easily separated from others by the propodeal enclosure rounded posteriorly (Nemkov et al., 1995; figs. 1-4 in Terayama, 2006; Nemkov, 2014). The other two species, *A. monticola* and *A. ratzeburgi* have triangular propodeal enclosure pointed posteriorly (Fig. 2D, E; fig. 5 in Nemkov, 2014). In the former, frontal furrow very shallow or evanescent and inter-antennal marking extended beyond inter-antennal area (Fig. 2C), while frontal furrow deep and distinct and the marking limited to inter-antennal area in the latter.

<sup>2</sup>\* ***Alysson monticola* Tsuneki, 1977**

*Alysson monticola* Tsuneki, 1977: 29, ♂ (holotype) ♀, Japan: Saitama Prefecture: Karisaka Pass [MNHAH].

**Material examined.** Korea: 4♂♂, GB: Uljin-gun, Mt. Baekamsan, 20 Jun-12 Jul 1999, Gu DS (probably collected with Malaise trap); 1♀, GN: Hadong-gun, Macheon-myeon, 12 Jul 2002, Park JS; 1♂, GW: Inje-gun, Girin-myeon, Jindong-ri, 37°23'46.09"N, 126°24'36.38"E, 20 Jul 2017-17 Aug 2017, Kwon OC (collected with Malaise trap).

Korean name: <sup>1</sup>\*알리손어리감탕벌속, <sup>2</sup>\*산어리감탕벌 (신칭)



**Fig. 2.** *Alysson monticola* Tsuneki. A, General habitus, male, in dorsal view; B, General habitus, male, in lateral view; C, Head, male, in frontal view; D, Propodeal enclosure, female; E, Propodeal enclosure, male. Scale bars: A, B=1 mm.

**Notes.** All Korean materials treated herein are well matched with detailed original description. All the legs of Korean materials is likely to be, however, more extensively yellowish-brown than ones of type materials from Japan. Almost entire legs, except dark brown on upper parts of fore femur and hind tibia, are yellowish brown in Korean materials.

**Distribution.** Russia (Kunashir Island), Korea (GW, GB, GN; new record), Japan (Hokkaido, Honshu, Kyushu).

<sup>1</sup>\**Alysson pertheesi* Gorski, 1852

*Alysson pertheesi* Gorski, 1852: 178 (as Perthéesi, incorrect original capitalization and diacritic mark), ♀ (syntypes), Lithuania: Vilnius [lost, except one specimen in ZMHU]; Tsuneki, 1974: 361 (N Korea: “Prov. South Pyongan: Pyongyang”); Tsuneki, 1982: 18 (listed); Paik, 1985: 203 (listed); Tsuneki, 1991: 199 (listed); Kim et al., 1994: 263 (listed); Nemkov et al., 1995: 455 (in key, including Korea in distribution); Terayama, 2006: 4, 19 (including Korea

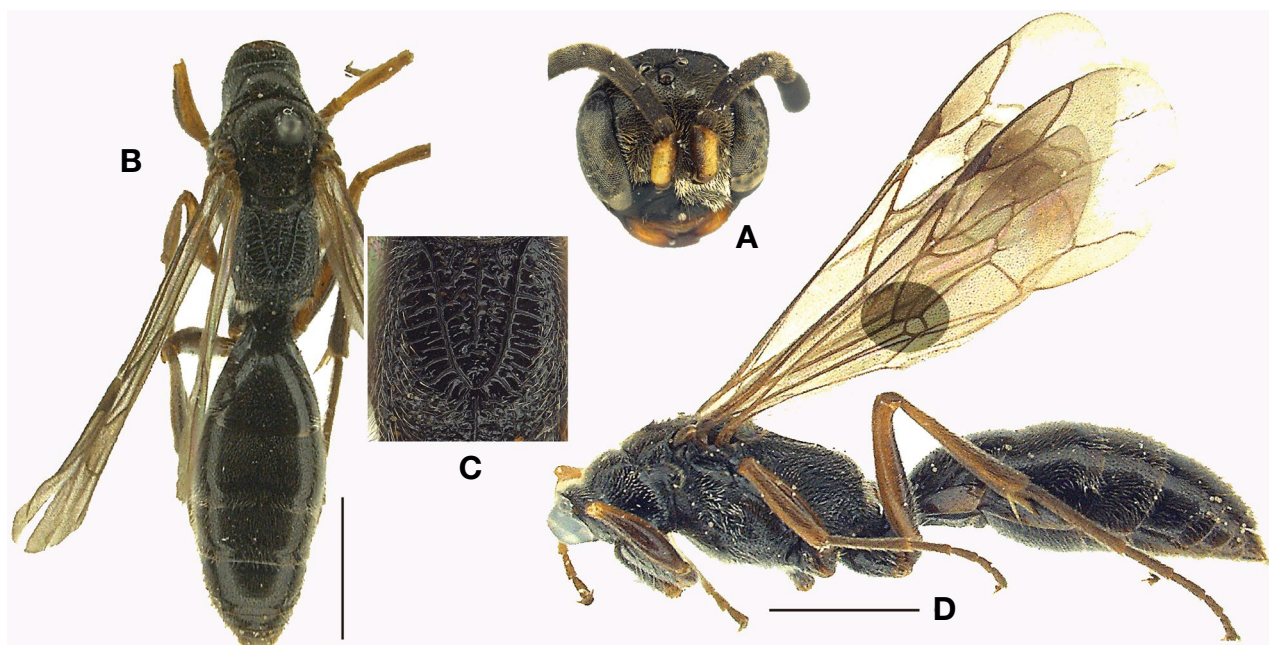
in distribution); Nemkov, 2009: 127 (including Korea in distribution); Lee et al., 2010: 210 (in Checklist of Korean Insects); Nemkov, 2012: 445 (including Korea in distribution); Nemkov, 2014: 280 (including Korea in distribution); Kim, 2014: 420 (listed); Lyu et al., 2014: 154 (listed).

**Distribution.** Transpalearctic: Europe through Russia to N China (Heilongjian), N Korea (PN) and Japan (Honshu); Taiwan.

<sup>2</sup>\**Alysson ratzeburgi* Dahlbom, 1843

*Alysson ratzeburgi* Dahlbom, 1843: 145, ♀ ♂ (as Ratzeburgi, incorrect original capitalization), ♂ (lectotype, designated by de Beaumont, 1953: 197), Norway: Ostre Naess Vaerdaliae [Lund]; Tsuneki, 1965a: 25 (in key, include N Korea in distribution); Tsuneki, 1965b: 47 (Korea: “Nansetsu-rei”); Kim, 1970: 612 (diagnosis, no Korean material), 815 (listed); Tsuneki, 1982: 18 (listed); Paik, 1985:

Korean name: <sup>1</sup>\*홍가슴어리감탕벌, <sup>2</sup>\*라쯔버그어리감탕벌



**Fig. 3.** *Didineis sibirica* Gussakovskij, male. A, Head, in frontal view; B, General habitus, in dorsal view; C, Propodeal enclosure; D, General habitus, in lateral view. Scale bars: B, D=1 mm.

203 (listed); Kim et al., 1994: 263 (listed); Nemkov et al., 1995: 455 (in key, including Korea in distribution); Nemkov, 2009: 127 (including Korea in distribution); Lee et al., 2010: 210 (listed); Nemkov, 2012: 445 (including Korea in distribution); Nemkov, 2014: 281 (including Korea in distribution); Kim, 2014: 421 (listed); Lyu et al., 2014: 155 (in Checklist of Korean Hymenoptera).

**Distribution.** Transpalearctic: Europe to the Far East including Russian Far East, N Korea (RG), Japan (Honshu).

<sup>1</sup>\* **Genus *Didineis* Wesmael, 1852**

*Didineis* Wesmael, 1852: 109. Type species: *Alysson unicornis* of Vander Linden, 1829 [= *Pompilus unicornis* Fabricius, 1798], by monotypy.

<sup>2</sup>\* ***Didineis sibirica* Gussakovskij, 1937**

*Didineis sibirica* Gussakovskij, 1937: 607, ♀ (holotype), Russia: Irkutsk Oblast': Ol'zony [ZIN].

**Material examined.** Korea: 1♂, JB: Jinan-gun, Jucheonmyeon, Unbong-ri, Mt. Gubongsan, 9 Aug 2015, Kim DW (head separately mounted).

**Diagnosis.** Body length ca. 6 mm in female (Nemkov et al., 1995; Nemkov, 2015), 4.5–5 mm in male. In both sexes, frons

densely punctate (interspaces between punctures less than puncture diameter or almost as long as); scutum finely, somewhat densely punctate (interspaces about puncture diameter); lateral surface of mesopleuron somewhat densely punctate, shiny; metasomal tergum 2 finely, somewhat sparsely punctate (interspaces more than puncture diameter). Propodeal enclosure strong and distinct carinae as in Fig. 3C. In female, flagellomeres 6–9 twice as long as wide. In male, flagellomeres 1–3 not concave ventrally, flagellomeres 6–9 longer than wide (Fig. 1D), and fore tibia not modified (not expanded).

**Distribution.** Russia (Irkutskaya Oblast, Buryatiya, Zabaykalskii Krai, Primorskii Krai), Korea (JB; new record), Japan (Honshu).

**Notes.** According to Nemkov (2015), this species “is unique among its congeners in having an all black body (including legs)” except for yellow ventral face of scape and apical flagellomere in male. Sole Korean specimen (male) herein, however, has legs, apical margin and mandible largely ferruginous or reddish brown (Fig. 3A, D). Which seems to be the case for Japanese one as shown in original description of *Alysson (Didineis) sibiricus nipponicus* Tsuneki, 1968 (male) that were synonymized with this species by Nemkov (1990). In males, black legs would not be the crucial characteristics for this species.

Korean name: <sup>1</sup>\* 집게더듬이여리감탕벌속 (신칭), <sup>2</sup>\* 집게더듬이여리감탕벌 (신칭)

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## CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

## ACKNOWLEDGMENTS

This work was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR2019 02205).

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Received July 22, 2019  
Revised October 22, 2019  
Accepted October 22, 2019