

# First Record of the Genus and Species, *Entomognathus brevis* (Hymenoptera: Crabronidae: Crabroninae) in Korea

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## ABSTRACT

The genus *Entomognathus* Dahlbom 1829 is recorded for the first time in the Korean Peninsula, represented by the species *Entomognathus brevis* (Vander Linden, 1829). This species is trans-Palaearctic in distribution ranging from northern Africa, through Europe, eastward to the Far East, and sole representative of the genus in the Far East. Of which occurrence in the Russian Far East, northern China and Japan were well documented, but nothing has been known so far in the Korean Peninsula. In this study, distributional range of *E. brevis* is expanded to South Korea in the Far East. Taxonomic information of the species and a revised key to genera of the tribe Crabronini occurring in the Korean peninsula are given.

**Keywords:** new record, *Entomognathus*, revised key, Crabronini, Korea

## INTRODUCTION

The author recently discovered four Korean crabronine specimens identified as *Entomognathus brevis* (Vander Linden, 1829). This species is widely occurred in the Palaearctic region, so called trans-Palaearctic in distribution, from Palaearctic Africa (northern Africa), England, through continental Europe and European parts of Russia, eastward to the Far East (refer to Pulawski, 2019), and only species representing the genus *Entomognathus* in the Far East. However, while its occurrence in the Russian Far East (Nemkov, 1986, 2012; Nemkov et al., 1995), northern China (Yasumatsu, 1939; Tsuneki, 1967, 1976; Leclercq, 1982; Wu and Zhou, 1996; Li and He, 2000) and Japan (Tsuneki, 1947; Tsuneki and Tano, 1969; Takahashi et al., 2009) were well documented, nothing has been known so far in the Korean Peninsula.

In this study, occurrence of the genus *Entomognathus* Dahlbom, 1844 in the Korean Peninsula is first reported, expanding the distributional range of *Entomognathus brevis* to Korea in the Far East. A revised key to Crabronini genera in the Korean Peninsula is provided for future researchers. It corresponds to the couplets 11 to 15 in Kim (2015), to which the genus *Entomognathus* and more user-friendly combina-

tion of characteristics for other genera (*Crabro*, *Crossocerus*, *Ectemnius*, *Lestica*, *Rhopalum*) are added.

Terms for external features follow Bohart and Menke (1976). Specimens treated herein will be deposited in the National Institute of Biological Resources (NIBR), Incheon, Korea.

## SYSTEMATIC ACCOUNTS

Family Crabronidae Latreille, 1802: 340. Based on *Crabro* Fabricius, 1775 (stem: Crabron-). Originally spelled Crabronites, latinized to Crabronida by Leach, 1812 (Edinb. Encycl.). Four other names of Latreille (1802) were available for this family, but Acloque (1897: 80) used Crabronidi acting as first reviser.

Subfamily Crabroninae Latreille, 1802. Based on *Crabro* Fabricius, 1775 (stem: Crabron-). Originally spelled Crabronites.

Tribe Crabronini Latreille, 1802. Based on *Crabro* Fabricius, 1775 (stem: Crabron-). Originally spelled Crabronites.

<sup>1</sup>\*Genus *Entomognathus* Dahlbom, 1844: 295. Type species: *Crabro brevis* Vander Linden, 1829, by monotypy.

<sup>2</sup>\**Entomognathus brevis* (Vander Linden, 1829)

*Crabro brevis* Vander Linden, 1829: 72, ♀ ♂ (Syntypes), Belgium: Bruxelles and Italy: Bologna (Inst. Roy. Sci. Nat. Belgique, Bruxelles).

*Entomognathus brevis* (Vander Linden): Dahlbom, 1844: 295 (new combination).

This species belongs to the nominate subgenus *Entomognathus* characterized by the combination of following characters: mesopleuron without sternalus; verticalus absent, or present as incomplete backward extension of omaulus; metasomal terga with posterior margins straight medially; male with 13-segmented antenna.

**Diagnosis** (applicable to both sexes unless otherwise noted).

Body length ca. 5 mm in females and 4 mm in males. Orbital fovea well developed, obliquely oriented toward lateral

ocellus (upper end of fovea apart from ocellus by about two-thirds of ocellus diameter), long oval and mat in female; much smaller in a male and obsolete (almost lacking) in another male specimen herein. Vertex with a short median impression between or beyond hind ocelli. Externoventral notch of mandible deep (Fig. 1C). Apical one-third of median lobe of clypeus obliquely depressed, appearing to be excavated in frontal view, upper margin of depressed area semi-elliptic, not punctate but mat, bare and clearly demarcated from remainder upper area where densely punctate and hairy; broad medio-apical margin of clypeus truncate, without distinct tooth. Antennal pedicel and all flagellomeres below broadly but weakly swollen, pale yellow, with linear tyloids on flagellomeres 2–4 (obsolete in other flagellomes) in male. Propodeal enclosure smooth and polished, and delimited by broad, deep and costate furrow. Pygidial plate well delimited by ca-



**Fig. 1.** *Entomognathus brevis* (Vander Linden), female. A, General habitus, in dorso-lateral view; B, Head, in frontal view; C, Clypeus and mandible with externoventral notch (arrow); D, Eyes with microscopic setae. Scale bar: A=1 mm.

Korean name: <sup>1</sup>\*흙타기큰턱은주둥이벌속 (신칭), <sup>2</sup>\*흙타기큰턱은주둥이벌 (신칭)

rina, triangular in shape, with dense punctures and stiff golden setae in female; trapezoidal to subquadrate in male, with sparser punctures and setae than in female.

Body largely black. In female, antennal scape below, apical small parts of fore femora, outer surfaces of fore and mid tibia, entire fore and mid tarsus, basal part of hind tibia yellowish brown; in male, larger basal part of mandible, antennal segment below almost entirely, almost entire faces of fore and mid femur, entire faces of tibiae and trochanters of all legs pale yellow. In both sexes, pronotal lobe pale yellow; last metasomal segment bright chestnut, and metasomal sterna and posterior marginal parts of last two or three metasomal terga chestnut.

**Specimens examined.** 1♀, 1♂, Korea: Gangwon-do, Yanggu-gun, Haean-myeon, 11 Jul 2009, Martin EA; 1♀, ditto, 30 Jul 2009, Martin EA; 1♂, ditto, 1 Aug 2008, Martin EA.

**Distribution.** Trans-palaearctic (Northern Africa, England, continental Europe, through European part of Russia to Russian Far East, N China (Xinjiang, Nei Mongol, Hebei, Heilongjiang), South Korea (Gangwon-do; new record), Japan (Hokkaido, Honshu); Oriental (Taiwan).

#### Key to the Korean genera of Crabronini

(Characters applicable to both sexes unless otherwise noted)

1. Mandible notched exteroventrally (arrow in Fig. 1C), simple apically. Eyes with short erect setae (Fig. 1D) ..... *Entomognathus* Dahlbom  
– Mandible entire, not notched exteroventrally, often dentate apically (but simple in *Lindenius*). Eyes bare or hairy in some *Lindenius* ..... 2
2. Metasoma petiolate; metasomal tergum 1 elongate and petiolate, more than twice as long as broad at maximum width, and often nodous apically. Palpal formula 5-3. Omaulus absent ..... *Rhopalum* Stephens  
– Metasoma subsessile to sessile; metasomal tergum 1 not elongate and petiolate, about as long as broad, or slightly broader than long, not nodous apically. Palpal formula 6-4. Omaulus absent to well developed ..... 3
3. Forewing recurrent vein joining submarginal cell nearer to its middle: posterobasal veinlet of submarginal cell less than 1.5× as long as distoposterior veinlet that distinctly longer than distal veinlet (fig. 122E in Bohart and Menke, 1976); jugal lobe various in length, shorter to longer than hindwing submedian cell. Propodeal enclosure finely sculptured, often shiny. Verticalus absent ..... 4  
– Forewing recurrent vein joining submarginal cell well beyond its middle: posterobasal veinlet of submarginal cell more than 2.0× as long as distoposterior veinlet that slightly longer than distal veinlet to slightly shorter (fig. 122F and G in Bohart and Menke, 1976); jugal lobe shorter

- than hindwing submedian cell. Propodeal enclosure strongly sculptured. Verticalus absent to well developed ..... 5
4. Ocelli in an equilateral or subequilateral triangle: distance between midocellus and hindocellus (DMH) slightly shorter than distance between hindocelli (DH), or DMH more than half length of DH. Mandible often dentate apically. Jugal lobe shorter to longer than hindwing submedian cell ..... *Crossocerus* Lepeletier and Brullé  
– Ocelli in a low triangle: DMH almost half length of DH. Mandible simple apically. Jugal lobe longer than hindwing submedian cell ..... *Lindenius* Lepeletier and Brullé
  5. Verticalus absent but sometimes replaced by an angle or sharp tooth. Recurrent vein joining not much beyond distal third of submarginal cell whose distoposterior veinlet nearly as long as distal veinlet, or slightly longer. In female (with 6-segmented metasoma), pygidial plate flat and subtriangular. In male (with 7-segmented metasoma), antenna 13-segmented; tibial shield often well developed ..... *Crabro* Fabricius  
– Verticalus well developed (usually L-shaped, sometimes short in some *Ectemnius*). Recurrent vein joining much beyond distal third of submarginal cell whose distoposterior veinlet shorter than distal veinlet. In female, pygidial plate strongly narrowed apically and spout shaped or gutter-like. In male, antenna 12-segmented; tibial shield absent ..... 6
  6. Orbital fovea distinct, long oval, margined by carina. Metasomal terga with dense (almost touching one another) foveate-sized punctures ..... *Lestica* Billberg  
– Orbital fovea absent or shallow and evanescent, or if delimited by a fine ridge then upper frons without moderate to dense punctures. Metasomal terga with punctulate- to punctate-sized punctures ..... *Ectemnius* Dahlbom

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#### CONFLICTS OF INTEREST

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

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