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## A new *Orussus* species from South Korea, and a key to the East Asian Orussidae (Hymenoptera)

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### Abstract

*Orussus melanosoma* Lee & Wei, **sp. nov.** from South Korea is described and illustrated. Phylogenetic analyses place the new species basally in *Orussus*, together with other species from the Far East. A key to species of Orussidae from the eastern Palaearctic is provided.

**Key words:** basal parasitoid, Eastern Palaearctic, *Orussus melanosoma*, sawfly, taxonomy

### Introduction

Orussidae is a unique family belonging to the ‘Symphyta’, Hymenoptera. It is a small group of parasitoid sawflies, consisting of about 90 known extant species in 15 genera in the world (Vilhelmsen 2003, 2007; Blank *et al.* 2006, 2010; Taeger *et al.* 2010; Vilhelmsen *et al.* 2013, 2014). Most species of Orussidae are thermophilous and imagines are active during the hottest hours of the day. Therefore, orussids are rarely collected (Burger & Taeger 1994). They are known to be idiobiont ectoparasitoids of larvae of wood-boring beetles such as Buprestidae and Cerambycidae or Hymenoptera such as Siricidae and Xiphydriidae (Kraus 1998; Rawlings 1957), although records of orussids parasitizing introduced siricids in New Zealand do not constitute a natural host relationship. Within the family, *Orussus* is the largest and most widely distributed genus. Currently, 28 valid species are recognized (Vilhelmsen *et al.* 2014; present paper). Recently, Vilhelmsen *et al.* (2014) reported three new species of the genus *Orussus* from the Oriental region. Here we describe a new species, *Orussus melanosoma* Lee & Wei, **sp. nov.**, from South Korea and provide a revised key to the eastern Palaearctic species of Orussidae.

### Materials and methods

Specimens were collected with Malaise traps (M.T.) and by sweeping. The morphological terms and characters used follow those of Benson (1938) and Togashi (2000). All photographs were obtained using an AxioCam MRc5 camera attached to a stereo microscope (Zeiss SteREO Discovery. V20; Carl Zeiss, Göttingen, Germany), processed using Axio Vision SE64 software (Carl Zeiss), and optimized with a Delta imaging system (i-solution; IMT i-Solution Inc., Vancouver, Canada). Collecting sites were abbreviated based on South Korea provinces, which were as follows: **[GB]**, Gyeongsangbuk-do; **[JN]**, Jeonranam-do. The examined specimens are deposited in the Animal Systematic Laboratory of Yeungnam University (YNU, Gyeongsan, South Korea).

### Phylogenetic analyses

The female and male described as a new species in the present paper were scored for the morphological character set for Orussidae initially assembled by Vilhelmsen (2003); for the latest published version, see

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## References

- Benson, R.B. (1938) On the Australian Orussidae, with a key to the genera of the world (Hymenoptera, Symphyta). *Annals and Magazine of Natural History*, 11, 1–15.  
<http://dx.doi.org/10.1080/03745481.1938.9755433>
- Benson, R.B. (1955) Classification of the Orussidae, with some new genera and species (Hymenoptera: Symphyta). *Proceedings of the Royal Entomological Society of London, Series B (Taxonomy)*, 24, 13–23.  
<http://dx.doi.org/10.1111/j.1365-3113.1955.tb01462.x>
- Blank, S.M., Kraus, M. & Taeger, A. (2006) *Orussus smithi* sp. n. and notes on other West Palaearctic Orussidae (Hymenoptera). In: Blank, S.M., Schmidt, S. & Taeger, A. (Eds.), *Recent Sawfly Research: Synthesis and Prospects*. Goecke & Evers, Keltern, pp. 265–278.
- Blank, S.M., Vilhelmsen, L. & Smith, D.R. (2010) *Ophrynon* (Hymenoptera: Orussidae) in California: diversity, distribution and phylogeny. *Insect Systematics and Evolution*, 41, 3–27.  
<http://dx.doi.org/10.1163/139956009x12550095535756>
- Burger, F. & Taeger, A. (1994) Aktuelle Nachweise von *Orussus abietinus* (Scopoli, 1763) (Hymenoptera, Orussidae). *Brandenburgische Entomologische Nachrichten*, 2, 61–62.
- Choi, W.Y. & Suh, K.I. (2011) First record of the genus *Strocorsia* (Orussidae: Hymenoptera) from Korea. *Korean Journal of Systematic Zoology*, 27, 268–270.  
<http://dx.doi.org/10.5635/kjsz.2011.27.3.268>
- Fabricius, J.C. (1798) *Supplementum Entomologiae Systematicae*. Hafniae, Ptoft et Storch, Copenhagen, 572 pp.
- Goloboff, P.A., Farris, S. & Nixon, K. (2000) TNT (Tree analysis using New Technology) (BETA) ver. 1.0. Published by the authors, Tucumán.
- Kim, C.H. (1970) *Illustrated encyclopedia of fauna and flora of Korea. Vol. 11. Insecta (III)*. Samhwa, 138 pp.
- Kraus, M. (1998) Die Orussidae Europas und des Nahen Ostens (Hymenoptera: Orussidae). In: Taeger, A. & Blank, S.M. (Eds.), *Pflanzenwespen Deutschlands (Hymenoptera, Symphyta). Kommentierte Bestandsaufnahme*. Goecke & Evers, Keltern, pp. 283–300.
- Latreille, P.A. ("An V" [1797]) *Précis des caractères génériques des insectes disposés dans un ordre naturel*. Par le Citoyen Latreille. Prévôt, Paris, xiii + [i] + 201 + [7] pp., 1 folding table.  
<http://dx.doi.org/10.5962/bhl.title.58411>
- Latreille, P.A. (1811) Orysse. In: Olivier, M. (Ed.), *Encyclopédie méthodique. Tome 8. Histoire naturelle. Insectes*. Paris, pp. 557–561.
- Maddison, W. & Maddison, D. (2011) Mesquite 2.75. Available from: <http://mesquiteproject.org/mesquite/mesquite.html> (accessed 1 September 2014)
- Rawlings, G.B. (1957) *Guiglia schauinslandi* (Ashmead) (Hym. Orussidae) a parasite of *Sirex noctilio* (Fabricius) in New Zealand. *Entomologist*, 90, 35–36.
- Taeger, A., Blank, S.M. & Liston, A.D. (2010) World Catalog of Symphyta (Hymenoptera). *Zootaxa*, 2580, 1–1064.
- Togashi, I. (2000) Description of a new species of the genus *Strocorsia* Konow (Hymenoptera: Orussidae) from Japan. *Proceedings of the Entomological Society of Washington*, 102, 105–107.
- Togashi, I. (2008) An additional species of the genus *Orussus* Konow (Hymenoptera, Symphyta, Orussidae) from Japan. *Biogeography: international journal of biogeography, phylogeny, taxonomy, ecology, biodiversity, evolution, and conservation biology*, 10, 23–25.
- Tsuneki, K. (1963) A contribution to the knowledge of Orussidae in Japan, with the description of a new species (Hym., Symphyta). *Etizenia: occasional publication of the Biological Laboratory, Fukui University, Japan, Fukui*, 2, 1–5.
- Vilhelmsen, L. (2003) Phylogeny and classification of the Orussidae (Insecta: Hymenoptera), a basal parasitic wasp taxon. *Zoological Journal of the Linnean Society*, 139, 337–418.  
<http://dx.doi.org/10.1046/j.1096-3642.2003.00080.x>
- Vilhelmsen, L. (2004) The old wasp and the tree: fossils, phylogeny and biogeography in the Orussidae (Insecta, Hymenoptera). *Biological Journal of the Linnean Society*, 82, 139–160.  
<http://dx.doi.org/10.1111/j.1095-8312.2004.00327.x>
- Vilhelmsen, L. (2007) The phylogeny of Orussidae (Insecta: Hymenoptera) revisited. *Arthropod Systematics and Phylogeny*, 65, 111–118.

- Vilhelmsen, L., Blank, S.M., Costa, V.A., Alvarenga, T.M. & Smith, D.R. (2013) Phylogeny of the ophrynopine clade revisited: review of the parasitoid sawfly genera *Ophrella* Middlekauff, *Ophrynopus* Konow and *Stirocorsia* Konow (Hymenoptera: Orussidae). *Invertebrate Systematics*, 27, 450–483.  
<http://dx.doi.org/10.1071/is13006>
- Vilhelmsen, L., Blank, S.M., Liu, Z. & Smith, D.R. (2014) Discovery of new species confirms Oriental origin of *Orussus* Latreille (Hymenoptera: Orussidae). *Insect Systematics and Evolution*, 45, 51–91.  
<http://dx.doi.org/10.1163/1876312x-00002087>