

A New Record of Species of the *Microplitis* (Hymenoptera: Braconidae: Microgastrinae) in Korea

Subin Choi¹, Hyojoong Kim^{2,*}

¹Division of Forest Biodiversity, Korea National Arboretum, Pocheon 11186, Korea

²Department of Biology, Kunsan National University, Gunsan 54150, Korea

ABSTRACT

The genus *Microplitis* (Braconidae: Microgastrinae) is reported for the first time from Korea. The *Microplitis* has often quite small hypopygium, very short ovipositor and rugose propodeum with large aleola. The genus contains 190 described species, among them 19 species were recorded in Korea. *Microplitis varicolor* was established by Viereck in 1917. The species is found as new to Korea in this study. *Microplitis varicolor* is endoparasitoid, especially attacking species of Noctuidae (Insecta: Lepidoptera) including pests of leguminous crop. In this study, diagnosis, photographs and host lists are included.

Keywords: Braconidae, *Microplitis*, new record, natural enemy, parasitoid wasp

INTRODUCTION

The subfamily Microgastrinae (Hymenoptera: Braconidae) is one of the large subfamilies in the Braconidae. With more than 2,000 species were described from the world (Yu et al., 2016). The subfamily is easily distinguished by the characteristic wing venation and the number of flagellomeres (Shaw and Huddleston, 1991).

The genus *Microplitis* of Microgastrinae is a moderate group, including 190 described species in the world (Yu et al., 2016), and among them approximately 19 species were recorded in Korea (Yu et al., 2016). Some *Microplitis* species have relatively large body compared with the other microgastrine wasps. Most species are solitary endoparasitoids, attacking macrolepidopterans (Shaw and Huddleston, 1991). *Microplitis* are identified by the following features: fore wing with second vein (r-m) and large propodeal areola present, roughly sculpturing of propodeum.

In this study, *Microplitis varicolor* Viereck, 1917 is reported for the first time from Korea. We provided diagnosis, photographs and host lists.

All examined materials for this study are deposited in National Institute of Biological Resources (NIBR), Incheon, Korea and Kunsan National University (KNU), Gunsan, Ko-

rea. The specimens were photographed with Leica microscope LAS v4.7 (Leica, Germany). Terminology of taxonomic characters followed Sharkey (1997) and Austin and Dangerfield (1992). Abbreviations used in this study are as follows: MLT, malaise trap; KNU, Kunsan National University; HK, Hyojoong Kim.

SYSTEMATIC ACCOUNTS

Order Hymenoptera
Family Braconidae Nees, 1811
Subfamily Microgastrinae Förster, 1862
Genus *Microplitis* Förster, 1862

***Microplitis varicolor* Viereck, 1917 (Fig. 1A-E)**
Microplitis varicolor Viereck, 1917: 203.

Material examined. Korea: 21 ♀♀ (KNU), Jeonbuk: Gunsan, Miryong-dong, KNU, 10–26 Jul 2013 (MLT), HK; 1 ♀, Gunsan, Miryong-dong, KNU, 2 Oct 2013, HK; 5 ♀♀, Gunsan, Miryong-dong, KNU, 22 Sep 2014, HK; 6 ♀♀, Gunsan, Miryong-dong, KNU, 29 Sep 2014, HK; 6 ♀♀, Gunsan, Miryong-dong, KNU, 19–25 Aug 2014 (MLT), HK; 1 ♀,

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***To whom correspondence should be addressed**
Tel: 82-63-469-4586, Fax: 82-63-469-7421
E-mail: hkim@kunsan.ac.kr

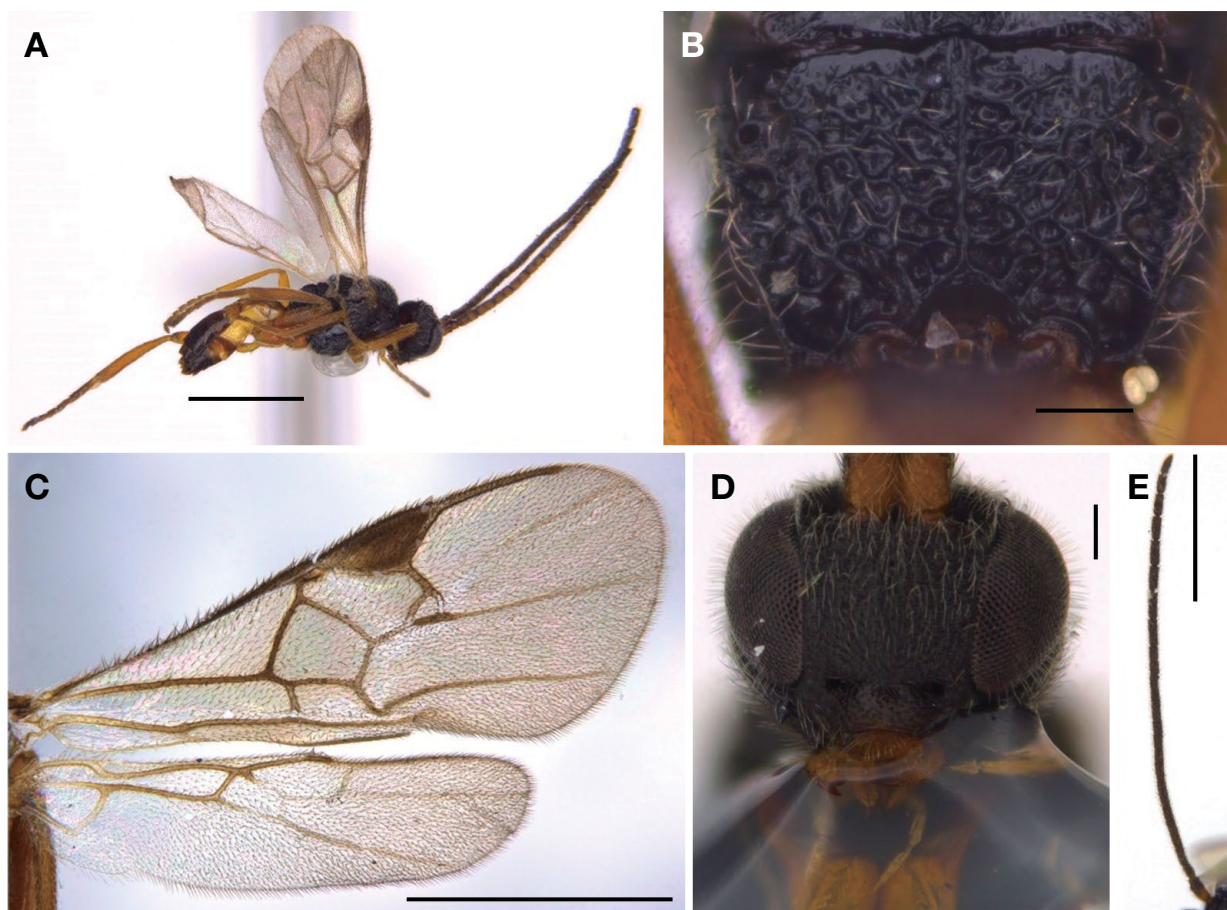


Fig. 1. *Microplitis varicolor*. A, Habitus, female; B, Propodeum; C, Wings; D, Head; E, antenna. Scale bars: A, C=1 mm, B, D=0.1 mm, E=0.5 mm.

Gunsan, Miryong-dong, KNU, 9–16 Sep 2015 (MLT), HK, (NIBR); 1 ♀, Gunsan, Miryong-dong, KNU, 22 Sep 2014, HK.

Diagnosis. *Color.* antennae dark (Fig. 1E), the scape and pedicel paler; legs nearly yellow, except extreme base of black posterior coxae, and the posterior tarsi, which are dusky, except the second and third tergites; abdomen wholly black. *Morphology.* Body length 2.8 mm (Fig. 1A). Head. face and vertex closely punctate and dull with setae (Fig. 1D). Thorax. mesonotum closely punctate; mesoscutum only a little shining on scutellum angles; whole thorax rather with setae; propodeum rugose (Fig. 1B). Abdomen. abdomen shorter than thorax, slender at base, broad on the third tergite; first dorsal abdominal plate slender, narrowing strongly to apex, where it is much narrower than at base, roughly punctate and rugulose, which is elevated and highly polished.

Distribution. Korea (new record), Bulgaria, Canada, China, Finland, Germany, Japan, Norway, Russia, USA.

Host. (host species [host plant]) Erebidae: *Hypena scabra* [Medicago sativa] (Marsh, 1979); Noctuidae: *Leucania lati-*

uscula (Marsh, 1979); *Peridroma saucia* (Crumb, 1929); *Protorhodes smithii* (Graham, 1965); *Pseudaletia unipuncta* [Medicago sativa] (Marsh, 1979); *Pseudoplusia includens* [Glycine max] (McCutcheon and Turnipseed, 1981); *Syngrapha epigaea* (Graham, 1965).

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REFERENCES

Austin AD, Dangerfield PC, 1992. Synopsis of Australasian Microgastrinae (Hymenoptera: Braconidae), with a key to genera and description of new taxa. *Invertebrate Systemat-*

- ics, 6:1-76. <https://doi.org/10.1071/IT9920001>
- Crumb SE, 1929. Tobacco cutworms. Technical Bulletin. No. 88. United States Department of Agriculture, Washington, DC, pp. 1-179.
- Förster A, 1862. Synopsis der Familien und Gattungen der Braconiden. Verhandlungen des Naturhistorischen Vereins der Preussischen Rheinlande und Westfalens, 19:225-288.
- Graham AR, 1965. A preliminary list of natural enemies of Canadian agricultural pests. Information Bulletin No. 4. Canada Department of Agriculture, Research Institute, Belleville, pp. 1-179.
- Marsh PM, 1979. Braconidae. Aphidiidae. Hybrizontidae. In: Catalog of Hymenoptera in America north of Mexico (Eds., Krombein KV, Hurd PD, Smith DR, Burks BD). Smithsonian Institution Press, Washington, DC, pp. 144-313.
- McCutcheon GS, Turnipseed SG, 1981. Parasites of lepidopterous larvae in insect resistant and susceptible soybeans in South Carolina. Environmental Entomology, 10:69-74. <https://doi.org/10.1093/ee/10.1.69>
- Nees von Esenbeck CGD, 1811. Ichneumonoids Adsciti, in Genera et Familias Divisi. Magazin Gesellschaft Naturforschender Freunde zu Berlin, 5:33-37 (in German).
- Sharkey MJ, 1997. Morphology and terminology. Manual of the New World Genera of the Family Braconidae (Hymenoptera). International Society of Hymenopterists, Washington, D.C., pp. 19-37.
- Shaw MR, Huddleston T, 1991. Classification and biology of braconid wasps. Handbooks for the identification of British insects. Vol. 7. Royal Entomological Society of London, London, pp. 1-126.
- Viereck HL, 1917. Guide to the insects of Connecticut, part III: the Hymenoptera, or wasp-like insects of Connecticut (No. 22). State Geological and Natural History Survey of Connecticut, 22:1-824.
- Yu DSK, van Achterberg C, Horstmann K, 2016. Taxapad 2016, Ichneumonoidea 2015. Database on flash-drive. Nepean, ON, Accessed 1 Jul 2018, <<http://www.taxapad.com>> .

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