

First record of *Phaenoglyphis villosa* (Hartig, 1841) from Korea (Hymenoptera: Cynipoidea: Figitidae: Charipinae)

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Abstract

The first record of *Phaenoglyphis villosa* (Hartig, 1841) (Hymenoptera: Figitidae: Charipinae) from Korea is given herein, being the second record of this species from the continental Eastern Palaearctic. The examined material, distribution, host associations and some data on the morphology of the Korean specimens are detailed.

Key words: *Phaenoglyphis villosa*; Charipinae; secondary parasitoids; aphids; Korea.

Resum. *Primera cita de Phaenoglyphis villosa* (Hartig, 1841) per a Corea (Hymenoptera: Cynipoidea: Figitidae: Charipinae)

Phaenoglyphis villosa (Hartig, 1841) (Hymenoptera: Figitidae: Charipinae) es cita per primer cop a Corea y per segona vegada a la zona continental del Paleàrtic Oriental. Es menciona el material examinat, alguns aspectes referents a la distribució, els hostes associats i la morfologia dels espècimens col·lectats a Corea.

Paraules clau: *Phaenoglyphis villosa*; Charipinae; parasitoids secundaris; pugons; Corea.

Introduction

The taxonomy of the species of Charipinae is very complicated because they have: (i) a small size (0.9-1.5 mm); (ii) a very weak, indistinct surface sculpture and an apparent lack of interspecific variability; (iii) a single sex and/or many singleton species descriptions, with insufficient species diagnoses; and (iv) the original descriptions are old and incomplete often lacking important diagnostic characters. Until recently the taxonomy of the Charipinae was chaotic, but in the last years some revisions and redescrptions of new genera have dealt with many of the taxonomic problems of this subfamily (Paretas-Martínez *et al.*, 2007, 2008, 2009; Paretas-Martínez & Pujade-Villar, 2006). Many authors have tried to clarify the status of some species of *Phaenoglyphis* (Hellén, 1963; Evenhuis, 1973, 1978; Quinlan, 1974; Evenhuis & Barbotin, 1977, 1987; Andrews, 1978; Quinlan & Evenhuis, 1980; Fergusson, 1986; Menke & Evenhuis, 1991; Pujade-Villar *et al.*, 2002; Pujade-Villar & Paretas-Martínez, 2006), but the taxonomy of this genus remains problematic and in need of a world revision.

Phaenoglyphis villosa is associated with numerous hosts. The trophic chain «*P. villosa* / primary parasitoid / aphid / food plant» uses different hosts and was discussed in detail in many papers (e.g. Evenhuis & Barbotin, 1977; Andrews, 1978; Carver, 1992).

Here we give the first record of *P. villosa* from Korea, which is also the second record of this species from the Continental Eastern Palaearctic; this contributes to the knowledge of a region poorly known on fauna of Charipinae and particularly on *Phaenoglyphis* species.

Material and methods

The specimens examined (8 ♂ and 19 ♀) come from the Hymenoptera collection of the National Institute of Agricultural Sciences and Technology (NIAST) in the Applied Entomology Division (Suwon, South Korea). After this study, some have been deposited in NIAST and some in the UB (University of Barcelona, JP-V collection), see depositaries in the material examined.

The pictures were obtained in a Leica 360 SEM at a low voltage (700V) and without any coating in order to preserve the specimens.

Results

All specimens (8 ♂ and 19 ♀) belong to the same species: *Phaenoglyphis villosa* (Hartig, 1841).

The material examined has the following labels:

2 ♀ and 1 ♂ “Korea, I.A.S., Suweon, 25.V.1970. J.C. Paik”; 1 ♂ (UB) “Korea, I.A.S., *Aphis rumicis*, 4.X.1974, J. C. Paik 4P-83”; 8 ♀ and 2 ♂ “Korea, I.A.S., Suweon, 27.IX.1975. J.C. Paik, ex. *Myzus persicae*”; 5 ♀ and 2 ♂ (1 ♀ UB) “Korea, *Urol. formosanus*, 14.X.1974, J. C. Paik, 4P-82”; 3 ♀ “Korea, I.A.S., Suweon, 24.V.1970. J.C. Paik, P189”; 2 ♂ “Korea, IAS, Suwon, 6.V.1994, J.Y. Choi”; 1 ♀ “Korea, NIAST, 30 May 1997, YPT, leg. J.Y. Choi”.

The specimens from Korea studied here were reared from *Aphis rumicis* Linnaeus, 1758, *Uroleucon formosanum* (Takahashi, 1921), and *Myzus (Nectarosiphon) persicae* Sulzer, 1776 (Hemiptera: Aphididae: Aphidinae: Aphidini and Macrosiphini); the primary parasitoids are unknown.

Discussion

The species of *Phaenoglyphis* are secondary solitary obligate endoparasitoids in Aphidiinae (Hymenoptera: Braconidae) and *Aphelinus* Dalman (Hymenoptera: Chalcidoidea: Aphelinidae), both primary endoparasitoids of aphids (Hemiptera: Aphididae) (Andrews, 1978; Carver, 1992, and others).

Phaenoglyphis can be easily distinguished from all other genera of Charipinae by the presence of a transverse mesopleural furrow (arrow in fig. 1) on the mesopleuron (Andrews, 1978; Fergusson, 1986; Pujade-Villar & Paretas-Martínez, 2006). *Phaenoglyphis villosa* is the only species of this genus with a partially open radial cell (arrow in fig. 2); in all other species the radial cell is entirely closed along the wing margin.

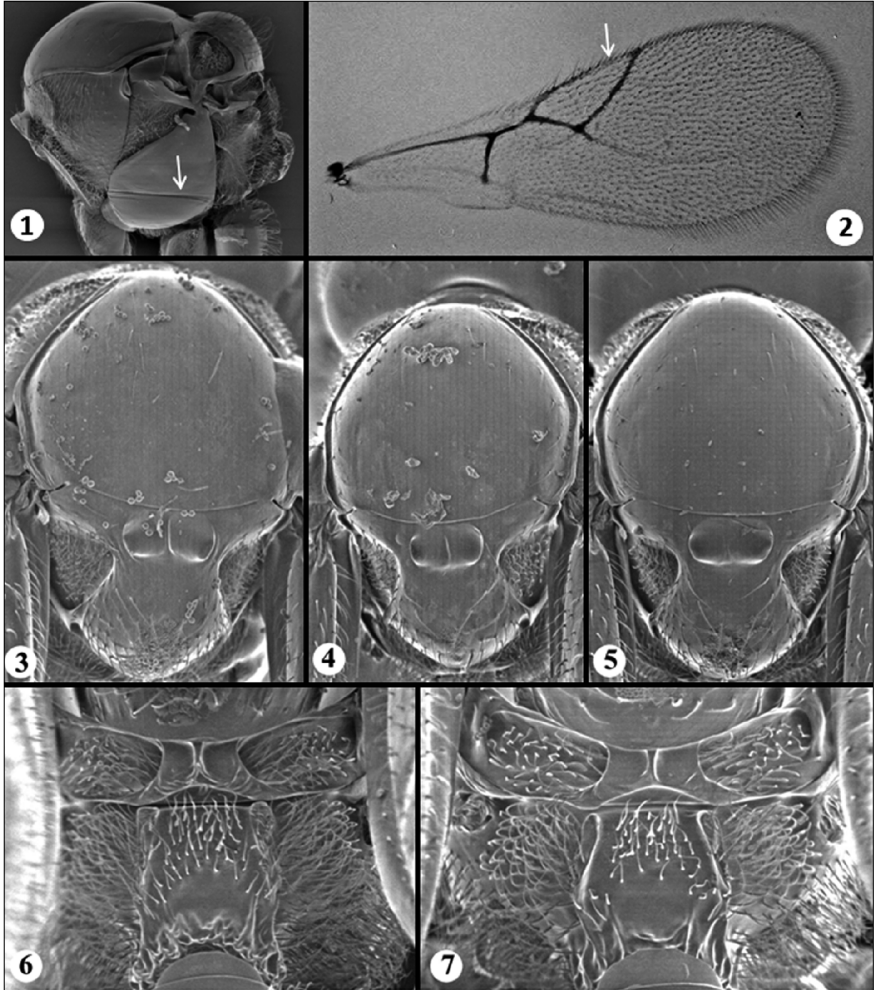
The list of synonyms and name combinations of *P. villosa* is very long and the diagnosis of the species established by previous authors was incorrect and incomplete. Evenhuis & Barbotin (1977) and Menke & Evenhuis (1991) were the first who partially resolved the taxonomic problems of this species. Recently Pujade-Villar *et al.* (2007) detailed the intraspecific variation of this species. Characters which earlier were referred as diagnostic, as flagellomeres' ratio, body colour, shape of scutellar foveae (Figs 3-5), length of radial cell and shape of propodeal carinae (Figs 6-7) have a strong variation and do not have any diagnostic value (Pujade-Villar *et al.*, 2007).

In the specimens examined herein, the mesosoma and head (partially) are amber, similar to material examined from China, Taiwan and Japan; the scutellar foveae are fused or partially fused as previously shown for specimens throughout the entire Holarctic region (Figs 3-5) (Pujade-Villar *et al.*, 2007).

Phaenoglyphis villosa is a cosmopolitan species collected on all continents. It has been introduced onto different continents together with aphids infected with primary parasitoids on their food plants. Carver (1992) suggested that *P. villosa* originated in the Palaearctic and accidentally was introduced from Europe to America and Australia. This species has been found in Algeria, Andorra, Argentina, Australia, Belgium, Canada, Chile, China, Finland, France, Germany, Great Britain, Greece, Hungary, Iran, Japan, Morocco, Moldova, Norway, the Netherlands, New Zealand, Romania, Russia, Spain, Sweden, Taiwan, Ukraine, and USA (Pujade-Villar *et al.*, 2007). The record from Korea given here is the second record from the continental Eastern Palaearctic, after the recent record from China (Pujade-Villar *et al.*, 2007).

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Figures 1-7. *Phaenoglyphis villosa*. **1:** mesopleuron, lateral view, arrow pointing mesopleural furrow; **2:** forewing, arrow pointing open margin of radial cell; **3-5:** scutum and scutellum, dorsal view (variation in shape of scutellar foveae is shown); **6-7:** propodeum, posterior view, (variation in shape of propodeal carinae is shown).

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