



Review of Chinese *Empoasca* Walsh (Hemiptera: Cicadellidae), with description of seven new species and some new Chinese records

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Abstract

Seven new species of *Empoasca* (*Empoasca*) Walsh, 1862 are described and illustrated. Five of the new species belong to the *Empoasca warchalowskii* group: *Empoasca* (*Empoasca*) *longa* Zhang & Liu, *Empoasca* (*Empoasca*) *megalophylla* Qin & Liu, *Empoasca* (*Empoasca*) *paragucia* Fletcher & Liu, *Empoasca* (*Empoasca*) *undulata* Zhang & Liu, *Empoasca* (*Empoasca*) *vickiae* Liu, **spp. nov.** The other two new species cannot be placed into a species group: *Empoasca* (*Empoasca*) *dendritica* Qin & Liu and *Empoasca* (*Empoasca*) *polyprocessa* Fletcher & Liu, **spp. nov.** An additional 15 species and the subgenus *Empoasca* (*Livasca*) Dworakowska & Viraktamath, 1978 are recorded for the first time from China.

Key words: Homoptera, leafhoppers, Typhlocybinae, Empoascini, taxonomy, new species, China

Introduction

The leafhopper genus *Empoasca* was established by Walsh (1862) and includes eleven subgenera worldwide (Dmitriev, 2003). To date, three subgenera of *Empoasca* have been previously recorded from China, i.e. *E.* (*Empoasca*) Walsh), *E.* (*Distantasca* Dworakowska), *E.* (*Matsumurasca* Anufriev). The Chinese *E.* (*Empoasca*) have been studied by Matsumura (1931), Dworakowska (1972, 1982), Kuoh (1966), Chou & Ma (1981), Cai & Shen (1999), Zhang & Xiao (2000) and Zhang, Liu & Qin (2008), with a total of 26 species known from China. Until now, fifteen species have been recognized in *E.* (*Distantasca*). Dworakowska (1972, 1977, 1980, 1981, 1994) illustrated ten species, Qin & Zhang (2007) described ten species, including two new species. Zhang, Liu & Qin (2010) reviewed *E.* (*Distantasca*) worldwide and redescribed fifteen species including two new species, and provided a key to species of this subgenus. *E.* (*Matsumurasca*) was established by Anufriev (1973), Dworakowska (1971, 1994), Thapa (1985), Qin & Zhang (2008) focused on this subgenus. Liu, Qin, Fletcher & Zhang (2011) reviewed *Matsumurasca* worldwide, and recognized fifteen species, including three new species, with two species recorded from China for the first time and provided a key of *E.* (*Matsumurasca*).

In this paper, seven new species of *Empoasca* (*Empoasca* Walsh 1862) are described and illustrated, including five new species from the *Empoasca warchalowskii* group and two other new species. New Chinese records are established for fifteen other species and the subgenus *Livasca* Dworakowska & Viraktamath, 1978.

Material and methods

All the specimens examined, including types of the new species, are deposited in the Entomological Museum, Northwest A&F University (NWAUFU). Habitus photos were taken by using a Scientific Digital micrography system equipped with an Auto-montage[®] imaging system and a highly sensitive QIMAGING Retiga 4000R digital camera (CCD). Multiple photographs were compressed into final images: 1. Images were printed and used as the