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Egg morphology, laying behavior and record of the host plants of *Ricania speculum* (Walker, 1851), a new alien species for Europe (Hemiptera: Ricaniidae)

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Abstract

The exotic planthopper, *Ricania speculum* (Ricaniidae) was recently detected in Liguria, in northern Italy, and recorded as a first alert for Europe. The first morphological description of eggs and laying behavior are given. Eggs are inserted into the woody tissue of a wide range of different host plants in such a unique manner among native and alien planthoppers of Italy that it can be used to describe the prevalence and diffusion of the species in new environments, though in the absence of juveniles and/or adults. In addition, the paper lists the host plants utilized for egg laying and describes the eggs.

Key words: Fulgoromorpha, Fulgoroidea, auchenorrhynchans, alien planthopper; host plants, oviposition, eggs, Italy

Introduction

International trade, globalised economic strategies and climate changes are the driving forces behind the introduction of alien organisms in new areas (Roques 2010). In the last few decades, Europe has been hugely affected by the accidental introductions of alien arthropods. According to a recent inventory of European alien invasive species (DAISIE 2009), 1,590 alien terrestrial invertebrates have been recorded, about 90% of which are arthropods. These introductions can have a severe negative impact on biodiversity, human health and the economy. The European Union is working on a policy for a shared regulation on invasive alien species in the Member States and a new regulation was approved in October 2014 (Regulation (EU) No 1143/2014). Prevention, early warning, rapid response and management are thus required for an effective limitation of the phenomenon in the EU States. The majority of arthropods introduced into Europe belong to the Hemiptera order. This is due to the major pathways for introduction such as the large ornamental plant trade and the movement as stowaways through transport (Rabitsch 2010).

The auchenorrhynchan species that are alien to Europe (Duso *et al.* 2005, Gnezdilov & Poggi 2014, Mazza *et al.* 2014, Mifsud *et al.* 2010, Zina *et al.* 2013) include seven species from four families of the Fulgoromorpha suborder: Acanaloniidae—*Acanalonia conica* (Say, 1830), Delphacidae—*Prokelisia marginata* (Van Duzee, 1897), Issidae—*Thionia simplex* (Germar, 1830), Flatidae—*Metcalfa pruinosa* (Say, 1830) and Ricaniidae—*Ricania speculum* (Walker, 1851), *R. japonica* Melichar, 1898, *R. hedenborgi* Stål, 1865. Introduced representatives of the second suborder, Cicadomorpha, are represented by one species of the family Membracidae—*Stictocephala bisonia* Kopp et Yonke, 1977 and 12 species of the family Cicadellidae: *Cicadulina bipunctata* (Melichar, 1904), *Empoasca punjabensis* Singh-Pruthi, 1940, *Erythroneura vulnerata* (Fitch, 1851), *Graphocephala fennahi* Young, 1977, *Igutettix oculatus* (Lindberg, 1929), *Jacobiasca lybica* (Bergevin et Zanon, 1922), *Japananus hyalinus* (Osborn, 1900), *Macropsis elaeagni* Emeljanov, 1964, *Melillaia desbrochersi* (Lethierry, 1889), *Orientus ishidae* (Matsumura, 1902), *Penthimiola bella* (Stål, 1855) and *Scaphoideus titanus* Ball, 1932. Only five of these species have been recorded in about 10 countries. *Stictocephala bisonia*, which was