



## Two new species of *Fiorinia* Targioni-Tozzetti (Hemiptera: Coccoidea: Diaspididae) from China

JIUFENG WEI<sup>1,2</sup>, BIN ZHANG<sup>1</sup> & JINIAN FENG<sup>1,3</sup>

<sup>1</sup>Key Laboratory of Plant Protection Resources and Pest Management of Ministry of Education, Entomological Museum, Northwest A&F University, Yangling, Shaanxi, 712100, China.

<sup>2</sup>College of Life Science, Northwest A&F University, Yangling, Shaanxi, 712100, China

<sup>3</sup>Corresponding author. E-mail: [jinianf@nwsuaf.edu.cn](mailto:jinianf@nwsuaf.edu.cn)

### Abstract

The adult females of two new species of armored scale, *Fiorinia tianshuiensis* Wei & Feng **sp. n.** and *F. dinghuensis* Wei & Feng **sp. n.**, are described and illustrated from specimens collected from China. A key is provided for the all *Fiorinia* species known from China.

**Key words:** taxonomy, Hemiptera, armored scale, Diaspididae, China

### Introduction

The scale insects or Coccoidea (Insecta: Hemiptera) are a diverse group of sap-sucking insects, with at least 30 families and around 8000 species (Andersen *et al.*, 2010). The armored scale insect family (Diaspididae) is the most species rich of the Coccoidea, with more than 2500 described species (Ben-Dov *et al.*, 2012). The armored scales are characterised by the adult female morphology, with the complete loss of legs, reduction of the eyes and antennae (Balachowsky, 1948) and the possession of a pygidium. These insects are usually less than 5 mm in length. The scale cover of this family incorporates the cast skins of their juvenile moults, together with waxes from various wax-producing ducts and pores (Henderson, 2011). Armored scales are primarily pests of perennial plants through sucking the plant's juices. For this reason, some species can cause great economic loss due to deformation or death of the plant's shoot and leaves, which may drop prematurely (Smith-Pardo, 2012). Armored scales have colonized every continent except Antarctica, and at least 200 species are pests (Andersen *et al.*, 2010; Miller & Davidson, 1990). Half of these species are polyphagous, several having been found on hundreds of host plant species from scores of families, although one third are monophagous (McClure, 1990).

The higher classification within the family is uncertain but two of the major subfamilies are the Aspidiotinae and the Diaspidinae. The genus *Fiorinia* belongs to the Diaspidinae and was established by Targioni-Tozzetti (1868) with *Diaspis fioriniae* Targioni-Tozzetti as its type species. Mature adult females of this genus are completely enclosed within their second (pupillarial) exuviae (Garcia, 2011; Miller & Davidson, 2005).

Since the introduction of the generic name *Fiorinia*, many additional species have been described (Maskell, 1887; Martin & Lau, 2011; Leonardi, 1906; Ferris, 1921; Kuwana, 1925; Takahashi, 1929-1936; Takagi, 1969, 1975, 1979, 1989a, 1989b, 1998, 2000, 2002, 2003, 2011; Tang, 1986; Young, 1987; Tao, 1999). *Fiorinia* species are mainly distributed throughout Eastern Asia although a few are also known from Africa, America and Europe but it is likely that these have been introduced (Takagi, 1963). Some, such as *F. theae* (tea scale), *F. fioriniae* (avocado scale) and *F. externa* (elongate hemlock scale), can cause deformation or death of their host plant, leading to great economic loss.

Sixty-one species are currently recognized worldwide, of which 31 have been recorded from China.

Recently, two further species of *Fiorinia* were discovered in China that appear to be new and these are