



## An annotated catalogue of the Iranian Tingidae (Hemiptera: Heteroptera)

Hassan GHAHARI<sup>1</sup>, Sara I. MONTEMAYOR<sup>2</sup>, Pierre MOULET<sup>3</sup> & Rauno E. LINNAVUORI<sup>4</sup>

<sup>1</sup>Department of Plant Protection, Shahre Rey Branch, Islamic Azad University, Tehran, Iran. E-mail: hghahari@yahoo.com

<sup>2</sup>Museo de La Plata, División Entomología, Paseo del bosque s/n - La Plata 1900, Buenos Aires, Argentina.

E-mail: smontemay@yahoo.com.ar

<sup>3</sup>Museum Requien, 67 rue Joseph Vernet, F-84000 Avignon, France; email: musee.requien@mairie-avignon.com

<sup>4</sup>Saukkokuja 10, FIN-21220 Raisio, Finland. E-mail: rauno.linnavuori@kolumbus.fi

### Abstract

An updated list of Iranian Tingidae Laporte is presented and discussed in this paper. For Iranian fauna, there are records of 74 species and subspecies of tingids distributed in 20 genera and subgenera, of which 72 of them belong to the subfamily Tinginae and 2 species to the subfamily Cantacaderinae (tribe Cantacaderini). In some species we list host plants, in Iran.

**Key words:** Heteroptera, Tingidae, catalogue, Iran, Palaearctic region

### Introduction

Lace bugs (Tingidae) are phytophagous and they always feed on the same plant or on a group of closely related ones (Drake & Ruhoff 1965; Schaefer & Panizzi 2000; Montemayor & Coscarón 2005). This group is distributed worldwide and consists of approximately 2600 species (Zhang *et al.* 2005). The pronotum and forewings of the adult have a delicate and intricate network of divided areas that resemble a lace. Their body appearance is flattened dorso-ventrally and they can be broadly oval or slender (Froeschner 2001). Both the adults and nymphs are usually found on the undersides of leaves, where they feed on the sap of living plants by piercing the epidermis of the leaves with their very slender stylets. These stylets are protrusile and retractile, and can easily penetrate the cellular tissue to extract the sap. Their feeding activities may cause great injury to and plasmolysis of the foliage (Drake & Ruhoff 1965).

The traditional classification for lace bugs was proposed by Drake & Davis (1960). They consider that the family Tingidae is composed by three subfamilies. The subfamily Tinginae, later divided into the tribes Ypsotingini, Litadeini, and Tingini (Drake & Ruhoff 1965); the subfamily Cantacaderinae with two tribes, Cantacaderini and Phatnomatini; and the subfamily Vianaidinae. This classification has been widely accepted, although several authors have considered Vianaidinae to be a family by itself (Kormilev 1955; Štys & Kerzhner 1975; Froeschner 1996; Lis 1999; Guilbert 2001; Montemayor & Carpintero 2007). Several authors have considered Ypsotingini a valid tribe after Péricart & Golub (1996); for example, Lis (1999), Guilbert (2001), Froeschner (2001), Wappler (2003). This classification has been revisited by Lis (1999) on the basis of morphological characters. Her analysis leads to a new classification in which Cantacaderini is raised to family level and Phatnomatini is considered closer to Tinginae than to Cantacaderini, forming a new subfamily that together with Tinginae constitute the family Tingidae.

Up to now all information about lace bugs remains fragmentary for Iran, and no attempt has been made to present it in a unified compilation of species and associated host plants. This could be the basis for a taxonomic analysis of Tingidae and studies considering their associated plants, which would be very useful not only for the knowledge of the group but also for preventing possible effects on plants of economic importance. In this paper we present such a compilation of Iranian Tingidae, based on extensive bibliographical research as well as material deposited in entomological collections. This paper is a continuation of the series of annotated catalogues of Heteroptera of Iran (see Ghahari *et al.* 2009a,b, 2010a,c).