

# The natural enemies of whiteflies (Hemiptera: Aleyrodidae) in southern Anatolia

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**Abstract.** In this study, a total of 48 natural enemies was found associated with 17 aleyrodid species from among the 26 aleyrodid species known from Southern Anatolia. In addition to these natural enemies, one species, *Acletoxenus formosus* Loew (Diptera: Drosophilidae), was identified as a first record for the Turkish fauna. The most common natural enemies, found on most whitefly species, were *Cladosporum* sp. (fungi), *Chrysoperla carnea* (Stephens) (Neuroptera: Chrysopidae), *Conwentzia hageni* Banks (Neuroptera: Coniopterygidae), *Clitostethus arcuatus* Rossi, *Serangium montazerii* Fürsch, *Chilocorus bipustulatus* L. (Coleoptera: Coccinellidae) and *Encarsia inaron* Walker (Hymenoptera: Aphelinidae).

**Kurzfassung.** In dieser Arbeit wurden in Südanatolien insgesamt 48 Arten von natürlichen Feinden von Weißen Fliegen festgestellt: Bei 17 der insgesamt 26 südanatolischen Arten von Weißen Fliegen wurde eine Parasitierung gefunden. Eine Art, *Acletoxenus formosus* Loew (Diptera: Drosophilidae), war neu für die Fauna der Türkei. Unter den natürlichen Feinden waren die häufigsten Arten *Cladosporum* sp. (fungi), *Chrysoperla carnea* (Stephens) (Neuroptera: Chrysopidae), *Conwentzia hageni* Banks (Neuroptera: Coniopterygidae), *Clitostethus arcuatus* Rossi, *Serangium montazerii* Fürsch, *Chilocorus bipustulatus* L. (Coleoptera: Coccinellidae) und *Encarsia inaron* Walker (Hymenoptera: Aphelinidae).

**Key words.** Natural enemies, whiteflies, phytopathology, Turkey, eastern Mediterranean.

## Introduction

Out of more than 1156 species of whiteflies (Hemiptera: Aleyrodidae) known worldwide (MOUND & HALSEY 1978), 26 have been recorded from Turkey (ULUSOY 2001). Research on whiteflies has so far focussed on southern Anatolia, and some of the studies include their natural enemies (KAYGISIZ 1976, KUMAŞ 1984, SATAR et al. 1999, SOYLU 1980, SOYLU & ÜREL 1977, ULUSOY 1998, 1999, 2001, ULUSOY & UYGUN 1996, ULUSOY & VATANSEVER 1997, ULUSOY et al. 1996, UYGUN et al. 1990). Several species of hymenopterous parasitoids attack 3<sup>rd</sup> and 4<sup>th</sup> larval instars and the so-called “pupal” stage. Many predatory insects have also been reported feeding on various stages of whitefly species. In the present paper, we review the natural enemies of whiteflies in Southern Anatolia.

## Material and methods

Surveys were made in 1990–1999 to determine the insect species that are predatory and parasitic on various stages of whiteflies. An extensive survey on a broad range of crop species was conducted in cultivated and non-cultivated areas of Southern Anatolia. Sample size, date, host plant