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Introduction to the Fruit Flies fauna (Diptera, Tephritidae) of Fars province, Iran

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Abstract: Data are given on the distribution of 16 species belonging to the Tephritidae (subfamilies Dacinae, Tephritinae and Trypetinae) that were collected by the first author in Fars province, Iran, during 2009-2010. *Urophora cuspidata* (MEIGEN 1826), *Urophora kasachstanica* (RICHTER 1964) and *Chaetorellia jaceae* (ROBINEAU-DESVOIDY 1830) are herein presented as a new to the Iranian fauna. Locality and date of collection, host(s) and distribution data for each species are provided.

Key words: Diptera, Distribution, Fars province, Fruit flies, Iran, New records, Tephritidae.

Introduction

Tephritidae are picture-winged flies of variable size and belonging to the superfamily Tephritoidea within the suborder Brachycera. (DE MEYER 2006). The Tephritidae comprise one of the largest and most abundant acalyptrate Diptera families worldwide of present day insects. The more than 4.400 species of fruit flies (family Tephritidae) include numerous species important to agriculture as plant pests and biological control agents of noxious weeds. Other species are important as model organisms used for various scientific studies, ranging from genetics and evolutionary biology to ecology (NORRBOM 2004, NORRBOM & CONDON 2010).

The faunistic and taxonomic papers treated the family Tephritidae in Iran accumulated rapidly through last years (GHARALI et al. 2006, KARIMPOUR & MERZ 2006, GILASIAN & MERZ 2008, MOHAMMADZADE NAMIN & RASOULIAN 2009, MOHAMMADZADE NAMIN et al. 2010, ZARGHANI et al. 2010). Several species have been included in catalogue and provisional works (NORRBOM 2004). The fauna of tephritid flies of Fars province, Iran is poorly studied. Papers by PARCHAMI ARAGHI (1995) and GILASIAN (2007) contain a few faunistic records for the Tephritidae of Fars province, but none of the studies focused specifically on the Tephritidae of the area. The objectives of the present study were to provide detailed information on the distribution of Tephritidae in Fars province and to contribute to the knowledge of the Iranian fauna.

Materials and methods

This paper is the result of more than 42 collection trips to different locations in Fars province during 2009-2010. The Fars province is located in southern Iran between 27°01' and 31°51'N and between 50°27' and 55°45'E, covering an area of 125,000 km². The climate of the province is arid to semiarid. The specimens were captured selectively by hand net or sweeping (Also, the McPhail trap and light trap were used) by the first author. The materials are deposited in the Department of Entomology, College of Agriculture, Islamic Azad University, Jahrom branch. The specimens were identified to genus level using the keys by WHITE & ELSON-HARRIS (1992) and NORRBOM (2004). Confirmations of species were performed by Prof. Valery A. KORNEYEV (I. I. Schmalhausen Institute of Zoology, NAS of Ukraine) and Prof. Murat KÜTÜK (Department of Biology, Faculty of Arts & Sciences, Gaziantep University, Turkey). The taxonomic arrangement of WHITE & ELSON-HARRIS (1992) and NORRBOM (2004) for subfamilies and species are followed in this paper. Collecting periods are arranged chronologically.

Results

In a total of 16 species belonging to the subfamilies Dacinae, Tephritinae and Trypetinae were collected in Fars province. Of these, 3 species are reported for the first time for Iranian fauna. The subfamilies, tribes and species are listed in alphabetic order.

Subfamily D a c i n a e

Tribe C e r a t i t i d i n i

Ceratitidis capitata (WIEDEMANN 1824)

M a t e r i a l : 7 ♀ 2 ♂ ♂: Shiraz; 29°36' N 52°31' E, 1538 m, 2 Nov. 2009.

H o s t p l a n t : Larvae in peaches, pears and apples (Rosaceae). Over 250 plant types from more than 40 families (WHITE & ELSON-HARRIS 1992).

D i s t r i b u t i o n : Afro-tropical, introduced: North Africa, South Europe, Middle East, Nearctic, Neotropical, West Australia (NORRBOM 2004).

Tribe D a c i n i

Bactrocera oleae (ROSSI 1790)

M a t e r i a l : 1 ♀: Shiraz; 30°27' N 53°37' E, 1574 m, 27 Aug. 2009.

H o s t p l a n t : Family Oleaceae are the preferred host of the olive fruit fly. Family Rosaceae had nine host tree species followed by Rutaceae. Other host tree species were distributed in Anacardiaceae, Fabaceae (Leguminosae), Lythraceae and Malpigiaceae families (ATHAR 2005).

D i s t r i b u t i o n : Palearctic, Afro-tropical, Oriental (NORRBOM 2004).

***Dacus persicus* (HENDEL 1927)**

M a t e r i a l : 3 ♀ ♀: Estahban; 29°07' N 54°01' E, 1764 m, 28 Oct. 2009; 4 ♀ ♀: Bavanat; 30°33' N 53°36' E, 1604 m, 12 Oct. 2009; 4 ♀ ♀ 2 ♂ ♂: Meymand; 28°52' N 52°44' E, 2082 m, 9 Oct. 2009; 4 ♀ ♀ 5 ♂ ♂: Firuzabad-Jam Road; 28°44' N 52°25' E, 1538 m, 16 Oct. 2009; 6 ♀ ♀ 5 ♂ ♂: Bidzard; 29°14' N 52°46' E, 1514 m, 24 Oct. 2009.

H o s t p l a n t : This species may be a minor pest on Sodom Apple (*Calotropis procera*, Asclepiadaceae) (MERZ 2008).

D i s t r i b u t i o n : Near East, Oriental (NORRBOM 2004).

Subfamily T e p h r i t i n a e

Tribe M y o p i t i n i

***Urophora cuspidata* (MEIGEN 1826)**

M a t e r i a l : 1 ♀: Homayjan village, Sepidan; 30°13' N 52°04' E, 2029 m, 5 Jun. 2009.

H o s t p l a n t : Attacks the capitula of *Centaurea* subgenus *Lopholoma* species and the larvae induce multilocular galls within the capitulum (WHITE & KORNEYEV 1989).

D i s t r i b u t i o n : Europe, East Palaearctic, Near East (NORRBOM 2004). **New record for the fauna of Iran.**

***Urophora kasachstanica* (RICHTER 1964)**

M a t e r i a l : 1 ♂: Kavar; 29°11' N 52°42' E, 1568 m, 5 Apr. 2010

H o s t p l a n t : Larvae develop in flowers of *Acroptilon repens* (L.) D. C. forming single lignified galls (KORNEYEV & WHITE 1993).

D i s t r i b u t i o n : Ukraine, East Palaearctic (NORRBOM 2004). **New record for the fauna of Iran.**

***Urophora quadrafasciata sjumorum* (ROHDENDORF 1973)**

M a t e r i a l : 1 ♀: Homayjan village, Sepidan; 30°13' N 52°04' E, 2029 m, 12 Jun. 2009.

H o s t p l a n t : It has been reared from the capitula of plant species belonging to *Centaurea* subgenus *Calcitrapa* (WHITE & KORNEYEV 1989).

D i s t r i b u t i o n : East Palaearctic, Europe, Near East, Oriental, introduced North America (NORRBOM 2004).

Tribe T e r e l l i i n i

***Chaetorellia jaceae* (ROBINEAU-DESVOIDY 1830)**

M a t e r i a l : 1 ♀: Shiraz; 30°27' N 53°37' E, 1538 m 5 Mar. 2010; 1 ♀: Kharameh; 29°32' N 53°19' E, 1499 m, 2 Mar. 2010; 1 ♀ 1 ♂: Kodian village, Ghalat, Sepidan; 29°48' N 52°19' E, 2089 m, 22 Mar. 2010.

H o s t p l a n t : *Ch. jaceae* normally attacks species of the subgenus *Jaceae* of *Centaurea*, but in Italy is also attacks *Ce. (Phalolepis) alba* (WHITE & MARQUARDT 1989).

D i s t r i b u t i o n : Europe, Near East (WHITE & MARQUARDT 1989). **New record for the fauna of Iran.**

***Chaetostomella cylindrica* (ROBINEAU-DESVOIDY 1830)**

M a t e r i a l : 1♀: Kodian village, Ghalat, Sepidan; 29°48' N 52°19' E, 2089 m, 1 Apr. 2010.

H o s t p l a n t : The larvae develop in flower heads of *Onopordon cynarocephalum*, *O. floccosum*, *Cousinia hermonis*, *Cirsium gaillardotii*, *Echinops viscosus* (Asteraceae) (FREIDBERG & KUGLER 1989).

D i s t r i b u t i o n : Europe, East Palaearctic, Near East, North Africa (NORRBOM 2004).

***Terellia virens* (LOEW 1846)**

M a t e r i a l : 1♀: Kohmare-Sorkhi; 29°32' N 52°21' E, 1909 m, 3 Oct. 2009.

H o s t p l a n t : The larvae develop in flower heads of *Centaurea iberica* and *C. hyalolepis* (Asteraceae) (FREIDBERG & KUGLER 1989).

D i s t r i b u t i o n : Europe, East Palaearctic, Near East, North Africa, introduced North America (NORRBOM 2004).

Tribe T e p h r i t i n i

***Acanthophilus helianthi* (ROSSI 1794)**

M a t e r i a l : 9♀ 5♂♂: Kavar; 29°11' N 52°42' E, 1568 m, 9 Mar. 2010; 10♀ 4♂♂: Khanzenyan-Sepidan Road, 29°53' N 52°09' E, 2100 m, 15 Apr. 2010.

H o s t p l a n t : This species may be a minor pest on some Asteraceae (MERZ 2008).

D i s t r i b u t i o n : Afro-tropical, East Palaearctic, Europe, Near East, North Africa, Oriental (NORRBOM 2004).

***Goniurellia longicauda* (FREIDBERG 1980)**

M a t e r i a l : 1♀: Shiraz; 29°36' N 52°31' E, 1538 m, 9 Mar. 2010; 1♀: Marvdasht; 29°52' N 52°48' E, 1597 m, 28 Mar. 2010.

H o s t p l a n t : The larvae develop in flower heads of *Pallenis spinosa* (Asteraceae) (FREIDBERG & KUGLER 1989).

D i s t r i b u t i o n : Afro-tropical, Europe, Near East, North Africa (NORRBOM 2004).

***Tephritis postica* (LOEW 1844)**

M a t e r i a l : 1♀: Estahban; 29°07' N 54°01' E, 1764 m, 29 Oct. 2009.

H o s t p l a n t : *Onopordum cynarocephalum* and *O. acanthium* (KÜTÜK 2006).

D i s t r i b u t i o n : Europe, Western Asia (FREIDBERG & KUGLER 1989).

***Trupanea amoena* (FRAUENFELD 1857)**

M a t e r i a l : 10♀ 5♂♂: Estahban; 29°08' N 54°02' E, 1764 m, 17 Mar. 2010; 8♀ 3♂♂: Darab; 28°51' N 54°18' E, 1679 m, 1 Nov. 2009.

H o s t p l a n t : It may be locally a pest species on cultivated *Lactuca* and *Calendula* (Asteraceae) (MERZ 2008).

D i s t r i b u t i o n : Afro-tropical, Australian, Europe, East Palearctic, Near East, North Africa, Oriental (NORRBOM 2004).

***Trupanea stellata* (FUESSLIN 1775)**

Material: 4♀ 2♂♂: Eij village, Estahban; 29°05' N 54°10' E, 1765 m, 20 Nov. 2010.

Host plant: The larvae develop in flower heads of *Senecio* spp., *Artemisia judaica*, *Inula graveolens* and *I. viscosa* (FREIDBERG & KUGLER 1989). In Europe reared from *Anthemis* spp., *Aster* sp., *Bidens* sp., *Centaurea* spp., *Crepis* spp., *Inula* sp., *Picris* sp., *Senecio* sp. and *Serratula* sp. (MOHAMMADZADE NAMIN et al. 2010).

Distribution: East Palaearctic, Europe, Near East, North Africa, Oriental (NORRBOM 2004).

Subfamily Trypetinae

Tribe Carpomyini

***Carpomya pardalina* (BIGOT 1891)**

Material: 1♀ 1♂: Darab; 28°51' N 54°18' E, 1679 m, 25 Apr. 2009; 1♂: Khark Land, Hormozgan province; 26°30' N 53°57' E, 30 m, 6 Jul. 2010.

Host plant: *Cucumis melo* (sweet melon) and *C. melo* var. *flexuosus* (snake cucumber) (Cucurbitaceae) (MOHAMMADZADE NAMIN et al. 2010).

Distribution: North Africa, Caucasus to Western India, introduced: Kazakhstan, Turkmenistan (NORRBOM 2004), Middle East, Oriental (MERZ 2008).

***Carpomya vesuviana* (COSTA 1854)**

Material: 6♀ 5♂♂: Konartakhte; 29°57' N 51°46' E, 1690 m, 12 Nov. 2009; 5♀ 4♂♂: Firuzabad-Jam Road; 28°44' N 52°25' E, 1538 m, 22 Oct. 2009.

Host plant: It is locally a pest species of *Ziziphus* spp. (Rhamnaceae) (MERZ 2008).

Distribution: Europe, East Palaearctic, Near East, Oriental (MERZ 2008).

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Zusammenfassung

Vorliegende Arbeit behandelt das Vorkommen von 16 Frucht- bzw. Bohrfliegen-Arten (Tephritidae, Unterfamilien Dacinae, Tephritinae und Trypetinae) in der iranischen Provinz Fars, basierend auf den Aufsammlungen des Erstautors in den Jahren 2009 bis 2010. *Urophora cuspidata* (MEIGEN 1826), *Urophora kasachstanica* (RICHTER 1964) und *Chaetorellia jaceae* (ROBINEAU-DESVOIDY 1830) sind Erstnachweise für den Iran. Angaben zu Wirtspflanzen und zur Verbreitung der einzelnen Arten ergänzen die Arbeit.

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