

**FAUNISTIC STUDY OF THE FRUIT FLIES
(DIPTERA: TEPHRITIDAE) OF KANDOVAN VALLEY
WITH A NEW RECORD FOR IRAN**

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ABSTRACT: Based on specimens collected from kandovan valley (East Azerbaijan province) during 2010, Twenty one species belonging to twelve genera were recognized. Of them, *Actinoptera discoidea* (Fallen, 1814) is being newly reported for the Iranian fauna. Identification key to the species was prepared. The locality and host plants of each species are given.

KEY WORDS: Tephritidae, Kandovan valley, Iran, new record.

Tephritidae is a large family of the order Diptera with more than 4400 described species over the world. Considering their damage on fruit plantations, they are important insects from the agricultural point of view as well as forest entomology (Merz, 2001). In addition some of species are important agents in biological control programs against weeds (White & Elson-Harris, 1992). Before this study, the fruit flies fauna of Kandovan valley has not been investigated thus it subjected for the present study. Kandovan valley is one of the longest Sahand chain mauntains' valleys with about 12 km length, located in south eastern part of East Azerbaijan province (Iran). This biosphere reserve situated in the south of Sultan mountain, one of the Sahand's summits, with about 35.5 km distance of Tabriz city with UTM coordinate system, X from 609181.42 to 617583.55 E; Y from 4177170.42 to 4183938.80 N and varying latitude from 1860 m to 3110 m a.s.l.

MATERIALS AND METHODS

Materials collected by sweeping on flower heads of Asteraceus plants in seven localities which situated through the working area during 2010 (Fig. 1).

The samples were killed in a killing jar containing potassium cyanide and the voucher specimens were deposited at Insect Museum of Tabriz University (IMTU) and the Saeed Mohamadzade Namin's personal collection (SMNC). The terminology primarily follows White et al. (1999).

RESULTS

In this study, twenty one species belonging to twelve genera of the family Tephritidae were collected in Kandovan valley. Of them, *Actinoptera discoidea* (Fallen, 1814) is being newly recorded from Iran insect fauna. In addition, all species are recorded for the first time from this region. The subfamilies, tribes and species are listed in alphabetic order.

Key to studied species of the family Tephritidae

1. Wings hyaline, without distinct pattern *Terellia serratulae*
- Wings with distinct pattern or crossbands 2
2. Wings with crossbands 3
- Wings pattern another forms 12
3. Wings with one crossbands *Sphenella marginata*
- Wings with four crossbands 4
4. Abdomen in black color 5
- Abdomen in yellow color 8
5. Aculeus without subapical steps *Urophora quadrifasciata quadrifasciata*
- Aculeus with subapical steps 6
6. Aculeus with two subapical steps *U. terebrans*
- Aculeus with one subapical steps 7
7. Preapical and discal crossbands parallel *U. mauritanica*
- Preapical and discal crossbands not parallel *U. jaceana*
8. Presutural dorsocentral setae present *Chaetorallia jaceae*
- Presutural dorsocentral setae absent 9
9. Extension of cell cup extending well beyond bm-cu crossvein *Orellia falcata*
- Extension of cell cup ending approximately in line with bm-cu crossvein 10
10. Scutum with a black apical spot and pair of the base of each setae black basal spots.....
- *Chaetostomella cylindrica*
- Scutum usually without a black spot, at most with narrow basal-lateral basal spots.....
- *Ter. gynaeochroma*
11. Abdomen in yellow color *Ter. ruficauda*
- Abdomen in black color 12
12. Cell dm completely hyaline *Acanthiophilus helianthi*
- Cell dm not completely hyaline 13
13. With three pair of frontal setae *Heringina guttata*
- With two pair of frontal setae 14
14. Proboscis geniculate *Actinoptera discoidea*
- Proboscis not geniculate 15
15. With one pair of scutellar setae 16
- With two pair of scutellar setae 17
16. Vein CuA₁ with a brown stripe along it from dm-cu to hind margin of wing.....
- *Trupanea amoena*
- Vein CuA₁ entirely with a hyaline area *Tr. stellata*
17. Apical fork of wing absent, only isolated brown spots present at end of vein R₄₊₅ and M....
- *Tephritis formosa*
- Apical fork of wing present 18
18. Hyaline area in cell dm not separate *Tep. cometa*
- Hyaline area in cell dm separate 19
19. Hyaline area in basal of wings small than black area *Euaesta bullans*
- Hyaline area in basal of wings more than black area *Tep. hurvitzi*

Subfamily Tephritinae

Tribe Myopitini

Urophora jaceana Hering, 1935

Material examined: (2♂♂, 1♀): Kandovan, 37°45' N, 46°18' E, 2844 m, 2 November 2010 (Khaghaninia).

Host plants: *Centaurea (jacea)* (Korneyev & White, 1999).

Distribution: Ireland, France, Russia, Turkey, America and Iran (Korneyev & White, 1999; Khaghaninia et. al., unpublished data).

Urophora mauritanica Macquart, 1851

Material examined: (1♂): Kandovan, 37°45' N, 46°17' E, 2696 m, 10 July 2010 (Khaghaninia).

Host plants: *Carthamus* spp. (Korneyev & White, 1999).

Distribution: Albania, Algeria, Bulgaria, Crete, Cyprus, Czech Republic, France, Greece Italy, Sardinia, Malta, Moldova, Morocco, Russia, Spain, Ukraine, Turkey, Azerbaijan, Kazakhstan, Uzbekistan, Israel, Libya and Iran (Kornayav & White, 1999; Merz & Korneyev, 2004).

***Urophora quadrifasciata sjumorum* Rohdendorf, 1937**

Material examined: (1♂, 1♀): Kandovan, 37°46' N, 46°16' E, 2496 m, 10 July 2010 (Gharajedaghi).

Host plants: *Centaurea* spp. (Korneyev & White, 1999).

Distribution: Cyprus, Turkey, Armenia, Azerbaijan, Uzbekistan, Turkmenistan, Tajikistan, Kazakhstan, Kirghizia, Israel, Pakistan and China (Korneyev & White, 1999).

***Urophora terebrans* (Loew, 1850)**

Material examined: (1♂): Kandovan; 37°46' N 46°15' E, 2341 m, 10 July 2010 (Khaghaninia).

Host plants: *Cirsium* spp., *Cynara cardunculus* and *Onopordum* spp. (Korneyev & White, 1999; Mohamadzade et al., 2010a).

Distribution: Russian, Armenia, Azerbaijan, Turkey and Iran (Norrbon et al., 1999; Mohamadzade et al., 2010a).

Tribe Tephritini

***Acanthiophilus helianthi* (Rossi, 1794)**

Material examined: (5♂♂, 5♀♀): Kandovan, 37°44' N, 46°19' E, 3005 m, 27 May 2010 (Gharajedaghi); (5♂♂, 4♀♀): Kandovan, 37°46' N, 46°16' E, 2496 m, 10 July 2010 (Gharajedaghi).

Host plants: *Carthamus* spp. and *Centaurea* spp. (Freidberg & Kugler, 1989).

Distribution: Africa, Kazakhstan, Kyrgyzstan, China, Transcaucasia, Turkey, Iran, Saudi Arabia, Pakistan, India and Thailand (Norrbon et al., 1999).

***Campiglossa absinthii* (Fabricius, 1805)**

Material examined: (1♂, 1♀): Kandovan, 37°42' N, 46°18' E, 2863 m, 27 May 2010 (Khaghaninia).

Host plants: *Artemisia vulgaris* (Baugnee, 2006).

Distribution: North & Central Europe to Siberia; Israel, Iran, India, China, Taiwan (Norrbon et al., 1999).

***Actinoptera discoidea* (Fallen, 1814)**

Material examined: (1♂): Kandovan, 37°42' N, 46°18' E, 2863 m, 18 June 2010 (Gharajedaghi).

Host plants: *Helichrysum arenarium* (Merz, 1994).

Distribution: Sweden, France, Central Europe, Ukraine, Caucasus and Turkey (Norrbon et al., 1999; Kutuk, 2008). **New record for the Iran insect fauna.**

***Euaresta bullans* (Wiedemann, 1830)**

Material examined: (1♂, 1♀): Kandovan, 37°46' N, 46°16' E, 2430 m, 2 November 2010 (Gharajedaghi).

Host plants: *Xanthium spinosum* (Mohamadzade et al, 2010a).

Distribution: Spain, Ukraine, Turkey, Israel, Iran, North America, South America, Southern Africa and Australia (Norrbon et al., 1999; Mohamadzade et al., 2010a).

***Heringina guttata* (Fallen, 1814)**

Material examined: (1♀): Kandovan, 37°44' N, 46°19' E, 2900 m, 18 June 2010 (Khaghaninia).

Host plants: *Anthemis arvensis*, *Leucanthemum vulgare*, *Cirsium palustre*, *Hieracium sabaudum* and *Helichrysum arenarium* (Merz, 1994).

Distribution: Sweden, Finland, Ukraine, Iran, and Kazakhstan (Zaitzev, 1947; Norrbom et al., 1999).

***Sphenella marginata* (Fallen, 1814)**

Material examined: (1♂, 3♀): Kandovan, 37°44 N, 46°19 E, 2900 m, 27 May 2010 (Gharajedaghi); (1♂, 1♀): Kandovan, 37°46 N, 46°16 E, 2464 m, 5 July 2010 (Khaghaninia).

Host plants: *Senecio* spp. (Merz, 1994).

Distribution: Europe, Russia, Egypt, Israel, Iran and Afghanistan (Norrbon et al., 1999; Mohamadzade et al., 2010a).

***Tephritis cometa* (Low, 1840)**

Material examined: (1♂): Kandovan, 37°46 N, 46°16 E, 2464 m, 5 July 2010 (Khaghaninia).

Host plants: *Cirsium* spp. (Freidberg and Kugler, 1989; Merz, 1994).

Distribution: Europe, Turkey, Afghanistan, Israel, Iran, Kazakhstan, Mongolia and China (Norrbon et al., 1999; Kutuk, 2008; Mohamadzade et al. 2010b).

***Tephritis formosa* (Low, 1844)**

Material examined: (1♀): Kandovan, 37°44 N, 46°19 E, 2900 m, 2 November 2010 (Khaghaninia).

Host plants: *Sonchus* spp., *Hypochaeris radicata*, and *Crepis virens* (Freidberg & Kugler, 1989; Merz, 1994).

Distribution: Europe, except Scandinavia, Israel and Iran (Norrbon et al., 1999).

***Tephritis hurvitzii* (Freidberg, 1981)**

Material examined: (3♂♂, 3♀♀): Kandovan, 37°44 N, 46°19 E, 3005 m, 18 June 2010 (Khaghaninia); (1♀): Kandovan, 37°44 N, 46°19 E, 3005 m, 5 July 2010 (Khaghaninia); (3♂♂): Kandovan, 37°44 N, 46°19 E, 2900 m, 2 November 2010 (Khaghaninia).

Host plants: *Scorzonera syrica* and *Tragopogon longirostris* (Freidberg & Kugler, 1989).

Distribution: Europe, Middle Asia, Israel, Syria, Jordan, Lebanon, Iraq and Iran (Norrbon et al., 1999; Mohammadzade et al. 2010b).

***Trupanea amoena* (Frauenfeld, 1857)**

Material examined: (1♂, 1♀): Kandovan, 37°44 N, 46°19 E, 3005 m, 5 July 2010 (Khaghaninia).

Host plants: *Lactuca* sp., *Picris hieracioides* and *Sonchus* sp. (Merz, 1994).

Distribution: Europe, Ethiopia, Middle East including Iran, India, Sri Lanka and Australia (Norrbon et al., 1999).

***Trupanea stellata* (Fuesslin, 1775)**

Material examined: (1♀): Kandovan, 37°46 N, 46°16 E, 2430 m, 5 July 2010 (Khaghaninia).

Host plants: *Senecio* spp., *Artemisia judaica*, *Inula graveolens* and *I. viscosa* in Israel (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. (Merz, 1994).

Distribution: Europe, North Africa, Israel, Iraq, Armenia, Iran, Saudi Arabia, India, Mongolia (Norrbon et al., 1999; Korneyev & Dirlbek, 2000).

Tribe Terellini***Chaetorellia jaceae* (Robineau-Desvoidy, 1830)**

Material examined: (1♂, 1♀): Kandovan, 37°44 N, 46°19 E, 2900 m, 18 June 2010 (Gharajedaghi).

Host plants: *Centaurea nigra* and *Cirsium* spp. (Korneyev & Konovalov, 2010).

Distribution: Northwest, central belt, south, Crimea, Central belt and south of Western Europe, Asia Minor and Iran (Rikhter, 1970; Gharajedaghi & Khaghaninia, unpublished data).

***Chaetostomella cylindrica* (Robineau-Desvoidy, 1830)**

Material examined: (1♀): Kandovan, 37°44 N, 46°19 E, 2900 m, 2010 (Khaghaninia).

Host plants: *Centaurea nigra* (White, 1988).

Distribution: Most of Europe, Iran, Afghanistan, Kazakhstan, Africa (Norrbon et al., 1999; Mohamadzade, 2010b).

***Orellia falcata* (Scopoli, 1763)**

Material examined: (1♀): Kandovan, 37°44 N, 46°19 E, 2900 m, 27 May 2010 (Khaghaninia); (1♀, 2♂♂): Kandovan, 37°46 N, 46°16 E, 2430 m, 2 November 2010 (Gharajedaghi).

Host plants: *Tragopogon pratensis* (Rikhter, 1970).

Distribution: Throughout Europe, Israel, Iran and Central Asia (Norrbon et al., 1999; Gilasian & Merz, 2008).

***Terellia gynaecochroma* (Hering, 1937)**

Material examined: (2♀♀): Kandovan, 37°44 N, 46°19 E, 2900 m, 27 May 2010 (Khaghaninia).

Host plants: *Onopordum* spp. (Freidberg & Kugler, 1989).

Distribution: Central and South Europe to Caucasus, Cyprus, Israel, Jordan, Syria and Iran (Norrbon et al., 1999; Mohamadzade, 2010a).

***Terellia ruficauda* (Fabricius, 1794)**

Material examined: (1♀): Kandovan, 37°46 N, 46°16 E, 2430 m, 27 May 2010 (Gharajedaghi).

Host Plant: *Cirsium* spp. (Rikhter, 1988).

Distribution: North America, Russia, Iran, Kazakhstan, Kyrgyzstan, Mongolia and China (Norrbon et al., 1999; Mohamadzade, 2010b).

***Terellia serratulae* (Linnaeus, 1758)**

Material examined: (2♂♂, 3♀♀): Kandovan, 37°42 N, 46°18 E, 2430 m, 27 May 2010 (Khaghaninia); (1♀, 1♂): Kandovan, 37°46 N, 46°16 E, 2430 m, 2 November 2010 (Gharajedaghi).

Host plants: *Cirsium* spp. and *Carduus* spp. (Merz, 1994).

Distribution: British Is., Scandinavia, Israel, Syria, Iraq, Iran, Kazakhstan and Africa (Norrbon et al., 1999).

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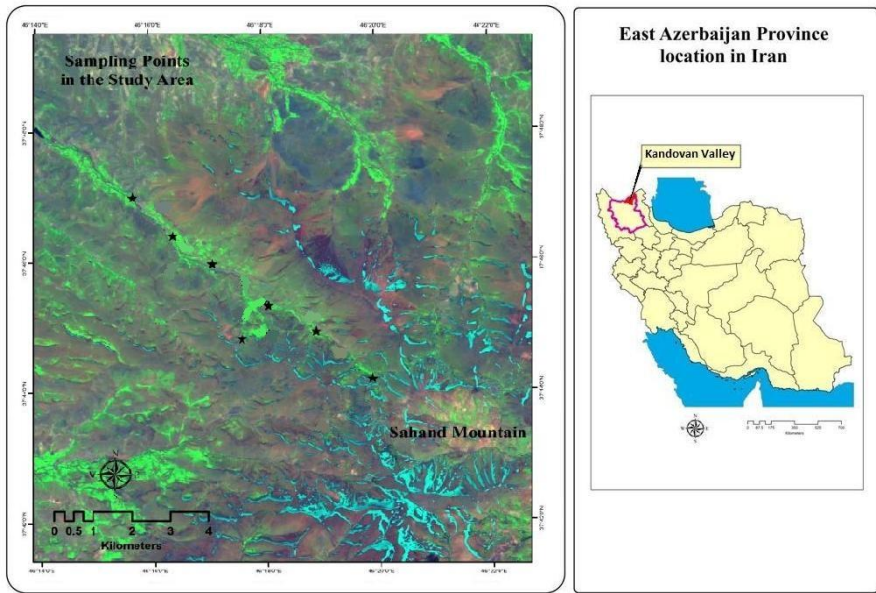


Figure 2. *Actinoptera discoidea* (male).