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## THE FRUIT FLIES (DIPTERA, TEPHRITIDAE) IN TEHRAN PROVINCE, WITH NEW RECORDS FOR IRANIAN FAUNA

S. Mohamadzade Namin, J. Nozari, Gh. Rasoulia

Department of Plant Protection, Faculty of Agriculture,  
University of Tehran, Karaj, Iran  
E-mail: saeedmn2005@gmail.com

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**The Fruit Flies (Diptera, Tephritidae) in Tehran Province, with New Records for Iranian Fauna. Mohamadzade Namin S., Nozari J., Rasoulia Gh.** — As the result of studies of the tephritid flies in Tehran Province (Iran) in 2008–2009, 38 species of 22 genera are found to occur in this region; altogether 47 species are listed; of them, 9 species and 2 genera (*Chetostoma* and *Xyphosia*) are recorded for the first time for Iranian fauna. In addition, *Steptorrhampus tuberosus* is reported as a new host plant for *Ensina sonchi*.

Key words: Diptera, Tephritidae, fruit flies, Iran, new records.

**Мухи-пестрокрылки (Diptera, Tephritidae) провинции Тегеран, с новыми находками для фауны Ирана. Мохаммадзаде-Намин С., Нозари Дж., Расоулиан Г.** — В результате исследований мух-пестрокрылок в провинции Тегеран (Иран) в 2008–2009 гг. обнаружены 38 видов из 22 родов; приведен список 47 видов, известных из района исследований, из которых 9 видов и 2 рода (*Chetostoma* и *Xyphosia*) впервые отмечены в фауне Ирана. Кроме того, *Steptorrhampus tuberosus* указан как новое кормовое растение *Ensina sonchi*.

Ключевые слова: Diptera, Tephritidae, мухи-пестрокрылки, Иран, новые находки.

The family Tephritidae (or fruit flies) is one of the largest families of acalyptrate Diptera with about 4500 species. Most species are phytophagous and some of them are injurious pests or effectively used in biological control programs against weeds (White, Elson-Harris, 1992).

Tehran Province has area about 19,000 km<sup>2</sup>. Before this study, little information was available on the tephritid flies of this region. Dirlbek (1980) reported *Euaestella iphionae* from Tehran. Recently, Gilasian (2008) and Mohamadzade, Rasoulia (2009) added 19 and 2 species, correspondingly, to the list. Thus, 21 species were known up to date from Tehran Province.

### Material and methods

Materials are collected by standard sweeping net or reared from flower heads of asteraceous plants.

Species were identified according to Hendel (1927), Freidberg, Kugler (1989), White, Elson-Harris (1992), Merz (1994) and Korneyev, White (1992–2000). Identity of some species was confirmed by Dr. V. A. Korneyev (Kyiv, Ukraine).

All the material is deposited in the Zoological Museum at the University of Tehran.

### Results

Thirty-nine Tephritidae species were collected in Tehran Province, of them, twenty-six species are recorded for the first time from this region; nine species of them and two genera are reported for the first time for Iranian fauna.

The subfamilies, tribes and species are listed in alphabetic order. Detailed morphological descriptions are not given. For further information, refer to the works of Hendel (1927), White (1988); Freidberg, Kugler (1989), White, Elson-Harris (1992), Merz (1994) and Korneyev, White (1999).

**Subfamily DACINAE****Tribe CERATITIDINI*****Ceratitis capitata* (Wiedemann, 1824)**

Freidberg, Kugler, 1989.

Material examined. 1 ♀, Mahan village, Chaloos road, Tehran Province, 5.10.2008 (Mohamadzade).

Host plants. Larvae in peaches, pears and apples (Rosaceae). Over 250 plant types from more than 40 families.

Distribution. Tropical Africa, Madagascar, Mauritius, Reunion; introduced: North Africa, s. Europe, Middle East, Neotropics, w. Australia, Hawaii (Norrbon et al., 1999).

**Tribe DACINI*****Dacus ciliatus* Loew, 1862**

White, Elson-Harris, 1992.

Material examined. 10 ♀, 8 ♂ Mahan village, Chaloos road, 5.10.2008 (Mohamadzade); 4 ♀, 2 ♂ Karaj, 13.09.2009 (Nozari).

Host plants. Many species of Cucurbitaceae (White, Elson-Harris, 1992).

Distribution. Senegal, Somalia, South Africa, Madagascar; Mauritius, Reunion, Egypt, Israel and Iran (Norrbon et al., 1999; Parchami Araghi, 1995).

**Subfamily TRYPETINAE****Tribe CARPOMYINI*****Carpomya pardalina* (Bigot, 1891)**

Hendel, 1927; Freidberg, Kugler, 1989 (*My.iopardalis*).

Material examined. 1 ♂, Zidasht, Taleghan, 1900 m, 36°9.941 N, 50°42.785 E, 19.06.2008 (Mohamadzade).

Host plants. *Cucumis melo* (sweet melon) and *C. melo* var. *flexuosus* (snake cucumber) (Cucurbitaceae) (Freidberg, Kugler, 1989).

Distribution. Egypt, Israel, Iraq, Iran, Saudi Arabia, Azerbaijan, Afghanistan, Pakistan, western India, Turkmenistan and Kazakhstan (Norrbon et al., 1999; Norrbom, 2001; Merz, Dawah, 2005).

***Carpomya vesuviana* Costa, 1854**

Hendel, 1927.

Material examined. 2 ♂, 3 ♀, Mahan village, Chaloos road, 5.10.2008; 1 ♂, Mehran village, Taleghan, 2100 m, 36°12.645 N, 50°56.303 E, 8.08.2009 (Mohamadzade).

Host plants. *Ziziphus* spp.

Distribution. Italy, Bosnia, Turkmenistan, Uzbekistan, Tadjikistan, Pakistan, India, UAE, Thailand. Recorded from Iran by Abai (1984).

***Rhagoletis berberidis* Jermy, 1961**

Merz, 1994.

Material examined. 1 ♂, Mehran village, Taleghan, 2100m, 36°12.645 N, 50°56.303 E, 18.08.2009 (Mohamadzade).

Host plants. *Berberis vulgaris* (Berberidaceae) (Merz, 1994).

Distribution. Switzerland, Austria, Hungary, Ukraine, Turkey and Russia (North Caucasus) (Merz, 1994; Norrbom et al., 1999). New record from Iran.

**Diagnosis.** Mesonotum shining black. Wing pattern black, with small intercalary band crossing cells  $r_1$  and  $r_{2+3}$  between discal and subapical crossbands, apical crossband not extending into cell  $m_{1+2}$  (fig. 1, 1). Scutellum yellow, at the base broadly blackened.

***Rhagoletis cerasi* (Linnaeus, 1758)**

Hendel, 1927; Korneyev, Merz, 1997.

Material examined. 1 ♀, Baraghan, 06.05.2009 (Moezipoor); 1 ♀, Arangeh, Chaloos road, 20.07.2009 (Mohamadzade).

**Host plants.** Cherries (*Prunus cerasus*, *P. avium*, *P. serotina* and *P. mahaleb*) (Rosaceae) and honeysuckles: *Lonicera tatarica*, *L. xylosteum* (Caprifoliaceae) (Afshar, 1937; Hendel, 1927; White, Elson-Harris, 1992; Merz, 1994).

**Distribution.** Europe, Russia, Iran, Kazakhstan, Georgia (Afshar, 1937; Norrbom et al., 1999; Mohamadzade Namin, Rasouljan, 2009).

**Remark.** Occurs on cherries in Iran.

***Rhagoletis flavicineta* Enderlein, 1934**

Korneyev, Merz, 1997.

Material examined. 1 ♂, Hasan joon village, Taleghan, 2000m, 36°12.173 N, 50°45.316 E, 10.09.2009, (Mohamadzade).

**Host plants.** *Lonicera* spp. (Korneyev, Merz, 1997), and probably some other *Lonicera* spp.

**Distribution.** Russia; Ukraine, Middle Asia, Iran (Mohamadzade Namin, Rasouljan, 2009).

***Rhagoletis flavigenualis* Hering, 1958**

Hering, 1958; Korneyev, Merz, 1997.

Material examined. 1 ♂, Mahan village, Chaloos road, 15.07.2009 (Mohamadzade).

**Host plants.** *Juniperus excelsa*, *J. seravschanica* and *Juniperus* spp.

**Distribution.** Turkey, Middle Asia (Korneyev, Merz, 1997); Switzerland (Merz, 2006); Iran (Gilasian, Merz, 2008).

**Tribe TRYPETINI**

***Chetostoma curvinerve* Rondani, 1856**

Freidberg, Kugler, 1989; Korneyev, 1990; Merz, 1994.

Material examined. 1 ♂, Mahan village, Chaloos road, 5.10.2008 (Mohamadzade).

**Host plants.** Larvae apparently live in galls on *Lonicera* induced by some sawflies (V. A. Korneyev, personal communication).

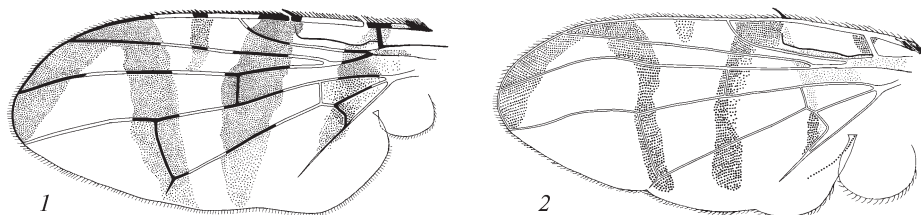


Fig. 1. Wings of Trypetinae: 1 — *Rhagoletis berberidis*; 2 — *Chetostoma curvinerve*.

Рис. 1. Крылья Трупетинае: 1 — *Rhagoletis berberidis*; 2 — *Chetostoma curvinerve*.

Distribution. Europe, North Africa, Israel, Uzbekistan (Norrbom et al., 1999). New record from Iran.

Diagnosis. Crossvein r-m at level of  $R_1$  apex; intercalary band of wing short, separated from discal crossband; basal half of cell dm between bm-cu crossband widely hyaline; apical crossband long, fused with preapical band in cell  $r_{2+3}$  (fig. 1, 2).

***Euleia heraclei*** (Linnaeus, 1758)

Hendel, 1927.

Material examined. 1 ♂, Mahan village, Chaloos road, 5.10.2008 (Mohamadzade).

Host plants. The larvae mine leaves of *Smyrnum olusatrum* (Apiaceae) in Israel (Freidberg, Kugler, 1989). In Europe is common on *Apium graveolens*, *Coriandrum* sp., *Daucus carota*, *Heracleum* sp., *Levisticum officinale*, *Pastinaca saliva*, *Petroselinum crispum*, *Peucedanum cervaria*, *Pimpinella* sp. and some other Apiaceae (Merz, 1994).

Distribution. Israel (Freidberg, Kugler, 1989); Iraq (Korneyev, Dirlbek, 2000); widespread in the Palaearctic Region (Norrbom et al., 1999). Recorded from Iran by Gilasian, Merz (2008).

**Subfamily TEPHRITINAE**

**Tribe TERELLIINI**

***Chaetorellia australis*** Hering, 1940

White, Marquardt, 1989.

Material examined. 3 ♂, 4 ♀, Lavasanat, 1800 m, 35°49.298 N, 51°40.197 E, ex flower heads of *Centaurea cyanus*, 07.05.2009; exit: 23.05.2009 (Mohamadzade).

Distribution. Poland, Hungary, Ukraine, Russia, Moldova, Bulgaria, Greece and Turkey (White, Marquardt, 1989; Merz, Korneyev, 2004). New record from Iran.

Diagnosis. Anterior supra-alar seta based on yellow ground. Discal and preapical crossbands separate. Cell bm with hyaline area (fig. 2, 1). Aculeus shorter than 1.45 mm.

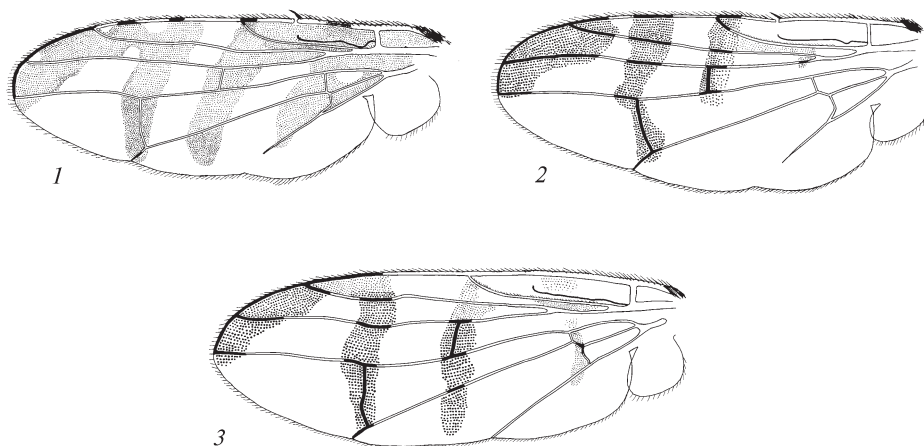


Fig. 2. Wings of Tephritinae Terelliini and Myopitini: 1 — *Chaetorellia australis*; 2 — *Terellia* sp. cf. *plagiata*; 3 — *Urophora terebrans*.

Рис. 2. Крылья Tephritinae Terelliini и Myopitini: 1 — *Chaetorellia australis*; 2 — *Terellia* sp. cf. *plagiata*; 3 — *Urophora terebrans*.

***Chaetorellia conjuncta* (Becker, 1913)**

Becker, 1913; Hendel, 1927; Freidberg, Kugler, 1989.

Material examined. 1 ♂, 2 ♀, Fashandak, Taleghan, 1800 m, 36°09.959 N, 50°42.785 E, from flower heads of *Centaurea iberica*, date of collecting: 22.07.2009, exit 25.07.2009; 2 ♂, 3 ♀, from flower heads of *Cent. solstitialis*, 22.07.2009, exit 29.07.2009 (Mohamadzade).

Distribution. Albania, Turkey, Syria, Israel, Jordan, Iraq, Iran, Kazakhstan, Kyrgyzstan, Pakistan and Egypt (White, Marquardt, 1989).

Diagnosis. Anterior supra-alar seta based on yellow ground. Discal and preapical crossbands joined.

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

Korneyev, 1986.

Material examined. 2 ♂, Zidasht, Taleghan, 1900 m, 36°9.941 N, 50°42.785 E; from flower heads of *Cirsium arvense*, 21.05.2008, exit 28.05.2008 (Mohamadzade).

Distribution. Most of Europe, Iran, Afghanistan, Kazakhstan, Africa (Norrbon et al., 1999).

***Orellia stictica* (Gmelin, 1790)**

Korneyev, 2003.

Material examined. 1 ♂, 5 km North East Abali, 2360 m, 35°50.304 N, 51°58.980 E, 29.08.2008; 1 ♀, Zidasht, Taleghan, 1900 m, 36°9.941 N, 50°42.785 E, 30.05.2009 (Mohamadzade).

Host plants. *Tragopogon* spp. and sometimes *Taraxacum*, *Scorzonera*, and a few other Cichorieae; larvae in flower heads (V. A. Korneyev, personal communication).

Distribution. Europe and Iran (Norrbon et al., 1999; Gilasian, Merz, 2008).

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

Hendel, 1927; Zaitzev, 1947; Dirlbek, 1980; Freidberg, Kugler, 1989.

Material examined. 1 ♀, 3 km West Bomehen, from flower heads of *Onopordum acanthium*, 03.04.2008, exit 15.04.2008; and *O. heteracanthum*, 04.06.2009, exit 08.06.2009 (Mohamadzade).

Distribution. Central and southern Europe, Cyprus, Israel, Jordan, Syria and Iran (Freidberg, Kugler, 1989; Norrbom et al., 1999; Korneyev, Dirlbek, 2000).

***Terellia quadratula* Loew, 1869**

Hendel, 1927; Freidberg, Kugler, 1989; Korneyev, 2006;.

Material. Not examined.

Host plants. *Echinops viscosus* (Freidberg, Kugler, 1989).

Distribution. Israel, Lebanon, Caucasus and Iran (Norrbon et al., 1999; Korneyev, Dirlbek, 2000; Korneyev, 2006; Gilasian, 2008).

***Terellia* sp. cf. *plagiata* (Dahlbom, 1850)**

Material examined. 1 ♂, Zidasht, Taleghan, Tehran Province, 1900 m, 36°9.941 N, 50°42.785 E, 30.05.2009 (Mohamadzade).

Remarks. This species is similar to *T. plagiata* in having long pedicellar lobes and mostly reduced subbasal crossband on the wing, differing by the subbasal crossband almost inconspicuous and the discal crossband short (fig. 2, 2). It cannot be identified from a single specimen without knowing its range of variability of the wing pattern, host plant, localization and morphological features of larvae.

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

Korneyev, 1986.

Material examined. 1 ♀ Fashandak, Taleghan, 1800 m, 36°09.959 N, 50°42.795 E, reared from *Cirsium arvense*, 14.06.2008, exit 3.07.2008, (Mohamadzade).

Distribution. North America, Europe, Russia, Kazakhstan, Kyrgyzstan, Mongolia, China; (Norrbom et al., 1999). New record from Iran.

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

Becker, 1913; Dirlbek, Dirlbeková, 1974; Freidberg, Kugler, 1989.

Material examined. 1 ♂, 2 ♀, Zidasht, Taleghan, 1900 m, 36°9.941 N, 50°42.785 E, swept from flower heads of *Cirsium arvense*, 19.06.2008 (Mohamadzade).

Distribution. British Is., Scandinavia and Kazakhstan, Israel, Syria, Iraq and Iran; N Africa (Norrbom et al., 1999; Korneyev, Dirlbek, 2000).

**Tribe MYOPITINI*****Urophora stylata* (Fabricius, 1775)**

Korneyev, White, 1999.

Material examined. 3 ♂, Zidasht, Taleghan, 1900 m, 36°9.941 N, 50°42.785 E, from flower heads of *Cirsium arvense*, 26.06.2008, exit 04.07.2008; 3 ♂, 1 ♀, Fashandak, Taleghan, 1800 m, 36°9.959 N, 50°42.795 E, 07.07.2008 (Mohamadzade).

Host plants. Larvae develop in flower head galls on *Cirsium phyllocephalon* and *C. gaillardoti* (Asteraceae) in Israel (Freidberg, Kugler, 1989). In Europe reared from *Cirsium arvense* and *C. vulgare* (Merz, 1994).

Distribution. Throughout Europe to Japan; Israel; Iran; Pakistan, India; Australia; North America (Norrbom et al., 1999; Karimpoor, 2006).

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

Korneyev, White, 1999; Gharali, Merz, Lotfalizadeh, 2005.

Material examined. 3 ♂, 4 ♀, 5 km North East Abali, 2360 m, 35°50.304 N, 51°58.980 E, from flower heads of *Cirsium lappaceum*, date of collecting: 8.08.2008, exit 22.08.2008 (Mohamadzade).

Distribution. Europe, Russian, Armenia, Azerbaijan and Turkey (Norrbom et al., 1999). Gharali, Merz and Lotfalizadeh (2005) reported "*U. terebrans*" as reared from *Centaurea*, with mention of a species associated with *Carthamus tinctorius* L. It is not understood from that short note, what species of *Centaurea* serves as the host for this species or was it correctly identified at all; taking into account that *U. terebrans* is associated only with *Cirsium*, *Cynara* and *Onopordum* species, that report is considered doubtful; it could belong to *U. sirunaseva* (Hering) occurring in neighboring Armenia on *Cent. solstitialis* L. or an undescribed species. Therefore this find is in fact the first confirmed record of *U. terebrans* from Iran.

Diagnosis. All femora entirely yellow. Wing more than 4 mm long, with 3 crossbands and subbasal crossband present as darkening near apex of cell bm. (fig. 2, 3). Aculeus longer than 2.5, with 2 pairs of prominent steps, with distance from 1st to 2nd step equal to or shorter than between 1<sup>st</sup> steps.

***Urophora xanthippe* (Munro, 1934)**

Korneyev, White, 1999.

Material examined. 1 ♀, 5 km North East Abali, 2360 m, 35°50.304 N, 51°58.980 E, 29.08.2008; 1 ♀, Telo, 1550 m, 35°44.917 N, 51°36.652 E, 7.05.2009; swept from *Acroptilon repens* (Mohamadzade).

Host plants. Reared from flower heads of *Acroptilon repens* in Yazd Province.

Distribution. Ukraine, Kazakhstan, Uzbekistan, Turkmenistan, Iran and Afghanistan (Korneyev, White, 1999; Karimpoor, Merz, 2006).

### Tribe NOEETINI

#### *Ensina sonchi* (Linnaeus, 1767)

Zaitzev, 1947.

Material examined. 2 ♂, 2 ♀, 5 km North East Abali, 2360 m, 35°50.304 N, 51°58.980 E, from flower heads of *Chondrilla juncea*, 8.08.2008, exit 11.08.2008; 1 ♂, 1 ♀, Koshk Bala, Chaloos road, from flower heads of *Steptorrhampus tuberosus*, 20.06.2009, exit 29.06.2009 (Mohamadzade).

Host plants. Larvae develop in flower heads of *Chondrilla juncea*, *Helminthia echioides*, *Lactuca* spp., *Picris* sp. and *Scorzonera syriaca* (Freidberg, Kugler, 1989). *Steptorrhampus tuberosus* (new host plant).

Distribution. Britain, Scandinavia, Africa, Iran, Saudi Arabia; Taiwan, Philippines and Japan (Zaitzev, 1947; Norrbom et al., 1999; Merz, Dawah, 2005).

#### *Hypenidium roborowskii* (Becker, 1908)

Hendel, 1927.

Material examined. 2 ♂, Karaj, Tehran Province; from flower heads of *Lactuca* sp., 01.09.2008, exit 10.09.2008, (Mohamadzade).

Host plants. Larvae in flower heads *Lactuca* sp. (new host plant).

Distribution. Syria, Jordan, Iraq, Iran, Afghanistan, Azerbaijan, Middle Asia, and western China (Norrbom et al., 1999; Korneyev, Dirlbek, 2000; Gilasian, Merz, 2008).

### Tribe TEPHRELLINI

#### *Oxyaciura tibialis* (Robineau-Desvoidy, 1830)

Hendel, 1927; Dirlbek, 1980; Freidberg, Kugler, 1989.

Material examined. 2 ♀, 5 km North East Abali, 2360 m, 35°50.304 N, 51°58.980 E, 23.06.2009 (Mohamadzade).

Host plants. In flower heads of *Nepeta septemcrenata* and *Lavandula coronopifolia* (Freidberg, Kugler, 1989).

Distribution. Europe, Africa, Syria, Kazakhstan, Iran, Saudi Arabia, UAE, Afghanistan (Norrbom et al., 1999; Korneyev, Dirlbek, 2000; Merz, Dawah, 2005; Merz, 2008).

### Tribe TEPHRITINI

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

Becker, 1913; Hendel, 1927; Freidberg, Kugler, 1989; Merz, 1994.

Material examined. 2 ♂, 5 km west Damavand, from flower heads of *Carthamus oxyacanthus*, 13.08.2008, exit 22.08.2008; 5 ♂, 4 ♀, 5 km North East Abali, 2360 m, 35°50.304 N, 51°58.980 E, 29.08.2008; 1 ♂, Shahrestanak, from flower heads of *Centaurea cyanus*, 05.06.2009, exit 13.06.2009 (Mohamadzade).

Host plants. The larvae develop in flower heads of various species of *Carthamus*, *Centaurea* and related genera of the family Asteraceae (Hendel, 1927; Freidberg, Kugler, 1989; Merz, 1994).

Distribution. North and East Africa; Central and South Europe; Kazakhstan, Kyrgyzstan, China, Transcaucasia, Turkey, Near and Middle East including Iran; Saudi Arabia, UAE, Pakistan, India and Thailand (Norrbom et al., 1999; Korneyev, Dirlbek, 2000; Merz, Dawah, 2005; Merz, 2008).

***Campiglossa misella*** (Loew, 1869)

Merz, 1994.

Material examined. 1 ♂, 5 km North East Abali, 2360 m, 35°50.304 N, 51°58.980 E, 29.08.2008 (Mohamadzade).

Host plants. Larvae develop in *Artemisia* sp. (Asteraceae) (Merz, 1994).

Distribution. West of the Palaearctic Region to Western China (Norrbon *et al.*, 1999). New record from Iran.

Diagnosis. Head higher than long; wing with 2 hyaline spots in cell br and basalmost hyaline spots in cells  $r_1$  and  $r_{4+5}$  of male small (fig. 3, 1). Oviscape shorter than 3 posteriormost preabdominal tergites. Body 3 mm.

***Campiglossa producta*** (Loew, 1844)

Hendel, 1927; Zaitzev, 1947; Freidberg, Kugler, 1989;.

Material examined. 1 ♂, Hasan joon village, Taleghan, 2000 m, 36°12.173 N, 50°45.316 E, 10.09.2009 (Mohamadzade).

Host plants. *Chondrilla juncea*, *Crepis* spp., *Leontodon* spp., *Hieracium* spp., (Merz, 1994) and *Sonchus arvensis*.

Distribution. Africa, Canary Is., Europe, Middle Asia, western China, Israel, Syria, Jordan, Iraq, Iran, Afghanistan (Norrbon *et al.*, 1999; Korneyev, Dirlbek, 2000).

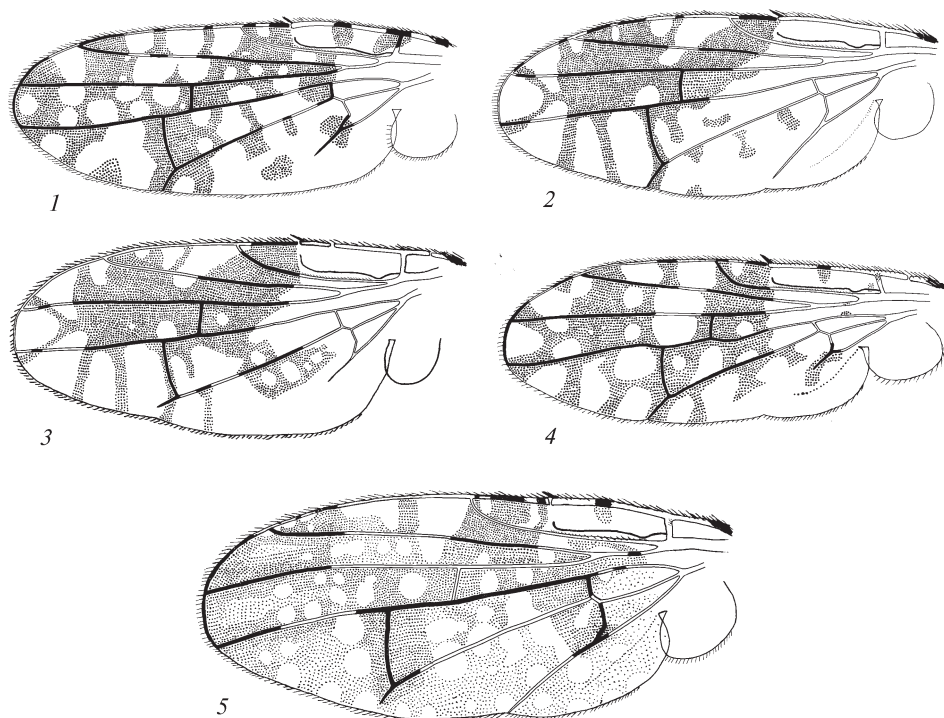


Fig. 3. Wings of Tephritini: 1 — *Campiglossa misella*; 2 — *Tephritis cometa*; 3 — *T. hurvitzi*; 4 — *T. praecox*; 5 — *Xyphosia miliaria*.

Рис. 3. Крылья Tephritini: 1 — *Campiglossa misella*; 2 — *Tephritis cometa*; 3 — *T. hurvitzi*; 4 — *T. praecox*; 5 — *Xyphosia miliaria*.



***Dioxyna bidentis*** (Robineau-Desvoidy, 1830)

Hendel, 1927; Hering, 1956; Freidberg, Kugler, 1989.

Material examined. 1 ♂, 5 km North East Abali, 2360 m, 35°50.304 N, 51°58.980 E, 15.06.2008 (Mohamadzade).

Host plants. The larvae develop in *Bidens* sp. and *Tagetes* sp. (Asteraceae) (Merz, 1994).

Distribution. North Africa, Canary Is., Europe, Israel, Syria, Jordan, Iraq, Iran, Afghanistan (Norrbohm et al., 1999; Korneyev, Dirlbek, 2000).

***Goniurellia longicauda*** Freidberg, 1980

Freidberg, 1980; Freidberg, Kugler, 1989.

Material examined. 1 ♂, Tajarak village, Roudehen, 30.05.2009 (at light) (Mohamadzade).

Host plants. Flower heads of *Pallenis spinosa* and *Asteriscus graveolens* (Freidberg, 1980).

Distribution. France, Canary Is., Morocco to Egypt, Turkey, Syria and Iran (Freidberg, 1980; Norrbom et al., 1999; Korneyev, Dirlbek, 2000).

***Goniurellia tridens*** (Hendel, 1910)

Hendel, 1927; Zaitzev, 1947; Freidberg, Kugler, 1989.

Material examined. 1 ♂, Tankaman, Nazarabad, 28.05.2008 (Mohamadzade).

Host plants. unknown; in Kyrgyzstan usually collected on *Inula helenium* (V. A. Korneyev, personal communication).

Distribution. Europe, Israel, Armenia, Turkmenistan, Uzbekistan, Iraq, Iran, Saudi Arabia, UAE, Pakistan, India (Zaitzev, 1947; Norrbom et al., 1999; Korneyev, Dirlbek, 2000; Merz, Dawah, 2005; Merz, 2008).

***Tephritis cometa*** (Loew, 1840)

Hendel, 1927; Freidberg, Kugler, 1989; Merz, 1994.

Material examined. 125 ♂, 99 ♀, 5 km North East Abali, 2360 m, 35°50.304 N, 51°58.980 E, 08.08.2008, from flower heads of *Cirsium arvense*, 08.08.2008, exit 12.08.2008; 22 ♂, 16 ♀, from flower heads of *C. vulgare*, 08.08.2008, exit 12.08.2008; 1 ♂, 3 ♀, from flower heads of *C. lappaceum*, 08.08.2008, exit 15.08.2008 (Mohamadzade).

Host plants. Larvae in *Cirsium* spp. (White, 1988; Merz, 1994).

Distribution. Europe, Israel, Afghanistan, Kazakhstan, Mongolia, China (Norrbohm et al., 1999). New record from Iran.

Diagnosis. Basal half of wing mainly hyaline; cell  $r_1$  with small subapical hyaline spot; branches of apical fork uniformly narrow along their entire length; hyaline spot of cell  $r_{2+3}$  continuous with basal indentation of cell  $r_1$ , (fig. 3, 2).

***Tephritis formosa*** (Loew, 1844)

Freidberg, Kugler, 1989.

Material examined. 1 ♂, Nazarabad, Tankaman, 22.07.2008; Taleghan 1, 1900 m, 36°9.941 N, 50°42.785 E, 19.06.2008 (Mohamadzade).

Host plants. In Europe reared from *Sonchus asper*, *S. oleraceus*, *Hypochaeris radicata* and *Crepis virens* (Merz, 1994).

Distribution. Europe, except Scandinavia, to Israel and Iran (Norrbohm et al., 1999).

***Tephritis hurvitzii* Freidberg, 1981**

Hendel, 1927; Freidberg, Kugler, 1989; Merz, 1994.

Material examined. 1 ♂, Haraz Road, 2000 m, 36°3.612 N, 52°15.431 E, 14.06.2008 (Mohamadzade).

Host plants. Larvae in stem galls on *Scorzonera syriaca* and *Tragopogon longirostris* (Freidberg, Kugler, 1989).

Distribution. Europe, Middle Asia, Israel, Syria, Jordan, Lebanon, Iraq (Norrbon et al., 1999; Korneyev, Dirlbek, 2000). New record from Iran.

Diagnosis. Basal half of wing mainly hyaline; apex of cell  $r_1$  without subapical hyaline spot; brown ray to costa in cell  $r_{2+3}$  is narrow, at most as wide as hyaline spot at end of vein  $R_{2+3}$ ; reticulate brown area from middle of cell *dm* to end of cell *bcu* uninterrupted (fig. 3, 3).

***Tephritis maccus* Hering, 1937**

Korneyev, Dirlbek, 2000; Gilasian, Merz, 2008.

Material examined. 1 ♀, 5 km North East Abali, 2360 m, 35°50.304 N, 51°58.980 E, 29.08.2008 (Mohamadzade).

Host plants. Unknown.

Distribution. Spain, Kyrgyzstan, Iran, Afghanistan, India. (Korneyev, Dirlbek, 2000).

***Tephritis postica* Loew, 1844**

Freidberg, Kugler, 1989.

Material examined. 2 ♂, 2 ♀, 3 km West Bomehen, from flower heads of *Onopordon acanthium*, 03.06.2008, exit 21.06.2008; 2 ♂, 3 ♀, Damavand, reared from *O. heteracanthum*, 04.06.2009, exit 14.06.2009 (Mohamadzade).

Distribution. Southern Europe, North Africa, Kazakhstan, Kyrgyzstan, Uzbekistan, Near and Middle East (Norrbon et al., 1999).

***Tephritis praecox* (Loew, 1844)**

Hendel, 1927; Freidberg, Kugler, 1989.

Material examined. 1 ♂, Zidasht, Taleghan, 1900m, N 36°9.941, E 50°42.785

Host plants. Flower heads of *Calendula arvensis* (Merz, 1994).

Distribution. S Europe, N Africa, Israel, Syria, Iraq and Uzbekistan (Norrbon et al., 1999; Korneyev, Dirlbek, 2000). New record from Iran.

Diagnosis. Only two large hyaline spots in cell  $r_{2+3}$ , both distal of r-m crossvein (fig. 3, 4).

***Tephritomyia despoliata* (Hering, 1956)**

Hering, 1956; Dirlbek, 1980; Merz, Dawah, 2005.

Material examined. 14 ♂, 20 ♀, 5 km North East Abali, 2360 m, N 35°50.304, E 51°58.980, from flower heads of *Echinops* sp., 08.08.2008, exit 30.08.2008 (Mohamadzade).

Distribution. Iran and Saudi Arabia (Hering, 1956; Merz, Dawah, 2005).

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

Hendel, 1927; Zaitzev, 1947; Dirlbek, 1980; Freidberg, Kugler, 1989.

Material examined. 1 ♂, Shahrestanak, 05.06.2009.

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

Distribution. Europe, Israel, Syria, Iraq, Iran, Saudi Arabia and UAE (Norrbon et al., 1999; Korneyev, Dirlbek, 2000; Merz, Dawah, 2005; Merz, 2008).

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

Becker, 1913; Hendel, 1927; Zaitzev, 1947; Dirlbek, 1980; Freidberg, Kugler, 1989.

Material examined. 1 ♀, 5 km North East Abali, 2360 m, 35°50.304 N, 51°58.980 E, 30.08.2008; 1 ♀, Lavasan, 07.05.2009; 1 ♀, Telo, 1550 m, 35°44.91 N, 51°36.652 E, from flower heads of *Senecio vulgaris*, 07.05.2009, exit 10.05.2009 (Mohamadzade).

Host plants. The larvae develop in flower heads of *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; Merz, Dawah, 2005).

### Tribe XYPHOSIINI

#### *Xyphosia miliaria* Hendel, 1927

Hendel, 1927; Merz, 1994.

Material examined. 1 ♀, Fashandak, Taleghan, 1800 m, 36°9.959 N, 50°42.795 E, reared from *Cirsium arvense*, 7.07.2008, exit 12.07.2008 (Mohamadzade).

Host plants. Larvae in flower heads of *Carduus* sp. and *Cirsium* sp. (Merz, 1994).

Distribution. Europe; Asian Russia; Turkey, Kazakhstan, Kyrgyzstan, Mongolia and China (Norrbon et al., 1999). New record from Iran.

Diagnosis. Thorax, legs and abdomen orange; oviscapae shorter than 4 posterior-most abdominal tergites; wing with yellowish-brown reticulate pattern, usually with 3 darker spots; base of wing reticulated; apex of cell  $r_{4+5}$  without hyaline spots (fig. 4, 5).

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