

FAUNISTIC SURVEY OF THYSANOPTERA IN FARS PROVINCE, IRAN

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ABSTRACT: The thrips (Thysanoptera) fauna of Fars province, Iran, was studied during year 2009. A total of 20 species representing 8 genera belonging to 3 families were collected and identified. *Aeolothrips balati* Pelikán 1958, *Aeolothrips citricinctus* Bagnall 1933, *Aeolothrips modestus* zur Strassen 1965 and *Thrips trybomi* (Karny 1908) are new records for the fauna of Iran. Locality and date of collection, host(s) and distribution data for each species are provided.

KEY WORDS: Fars province, Iran, Fauna, New record, Thrips, Thysanoptera.

The Thrips, or Thysanoptera, is one of the orders of insects distributed through all parts of the world. More than 5500 species of thrips are currently recognised from around the world. The traditional classification of the Order Thysanoptera is adopted, recognising nine Families for living species (plus three fossil families), with two subfamilies in the Phlaeothripidae (the only Family in suborder Tubulifera), and four subfamilies in the Thripidae (one of eight Families comprising suborder Terebrantia) (Mound, 2008).

The thrips in Iran has been a subject of special investigations only in the last few years. The first published records of Iranian Thysanoptera those by Afshar (1938) and several species were subsequently recorded by Davatchi (1949), Salavatian (1959), Farahbakhsh (1961), Shojai (1971), Mortazawiha & Dern (1977), Zahedi (1992), Seyedoleslami & Naderi (1993), Modarres Awal (1994), Cheraghian (1996) and Cheraghian & Hojat (1998). The faunistic and taxonomic papers treated the family in Iran accumulated rapidly through last years (Gilasian, 2000; Javan Moghadam et al., 2000; Mashhadi Jafarlo & Malkeshi, 2000; Moharramipour et al., 2000; Noori et al., 2000; Alavi & zur Strassen, 2002; Etebari & Hesami, 2002; Kalafchi et al., 2002; Minaei et al., 2002; Mojeni, 2002; Moodi, 2002; Saeidi et al., 2002; Teraz & Kheyrandish Koshkoei, 2002; Alavi, 2004; Alemansour & Fallahzadeh, 2004; Jafari & Fallahzadeh, 2004; Jalili Moghadam & Azmayesh Fard, 2004; Khormaly, 2004; Mansouri, et al., 2004; Taghizadeh et al., 2004; Hasani & Fallahzadeh, 2005; Khanjani & Mirab Baluo 2005a,b; Akbarzadeh Shoukat & Shayesteh, 2006; Pirafkan et al., 2006; Alavi et al., 2007; Minaei & Mound, 2008; Minaei & Mound, 2010).

There are 177 nominal species of Thysanoptera reported in Iran, including 132 species of Terebrantia in 47/49 genera, and 45 species of Tubulifera in 15 genera (Bhatti et al., 2009). The objectives of the present study were to provide detailed information on the distribution of Thysanoptera in Fars province, Iran and to

contribute to the knowledge of the Iranian fauna. It includes general distribution and previously recorded from Iran.

MATERIALS AND METHODS

Thrips specimens were collected at different localities in Fars province, Iran during 2009. 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 by shaking and beating herbaceous plants, brushes, and branches of trees, shaking leaf litter beneath the trees, and picking flowers of trees and herbaceous plants. The specimens were stored in vials with AGA (60% alcohol 10 parts, glycerol 1 part, acetic acid 1 part) and examined with a microscope after slide preparations with Hoyer's medium using the method outlined by Alavi & Kamali (2003). Voucher specimens of all thrips species were deposited in the Insect Collection of the Islamic Azad University, Jahrom Branch.

RESULTS

A total of 20 thrips species representing 8 genera belonging to 3 families were collected from different regions of Fars. The list of species and their distributional data are given below.

Terebrantia: Aeolothripidae

Genus *Aeolothrips* Haliday, 1836

***Aeolothrips balati* Pelikán, 1958**

Material examined: Shiraz, 1 male, on *Bassia scoparia* (L.) A. J. Scott (Chenopodiaceae), 22.v.2009.

Distribution: Turkey, Bulgaria, Spanish mainland (zur Strassen, 2003), East Palaearctic (Fauna Europaea Web Service, 2004), **New record for Iran fauna.**

***Aeolothrips citricinctus* Bagnall, 1933**

Material examined: Marvdasht, 1 female, 1 male, on *Triticum aestivum* L. (Poaceae), 31.v.2009.

Distribution: Europe (France, Spain, Portugal, Ukraine), North Africa (Tunisia, Algeria, Morocco) on the flower bushes (zur Strassen, 2003; Fauna Europaea Web Service, 2004), **New record for Iran fauna.**

***Aeolothrips collaris* Priesner, 1919**

Material examined: Shiraz, 1 female, 2 male, on *Bassia scoparia* (L.) A. J. Scott (Chenopodiaceae), 22.v.2009.

Distribution: Europe (Albania, Azores, Bulgaria, Canary Islands, Corsica, Croatia, Cyprus, Turkey, Germany, Greek mainland, Italian mainland, Macedonia, Madeira, North Aegean Islands, Portuguese mainland, Russia South, Sardinia, Sicily, Spanish mainland, Ukraine), East Palaearctic, Near East, North Africa, Oriental region on the most of bushes of flower and vegetables (zur Strassen, 2003; Fauna Europaea Web Service, 2004).

Iranian Records: Golestan province (Mortazawiha & Dern, 1977; Alavi & zur Strassen, 2002; Alavi, 2004; Alavi et al., 2007), Fars province (Minaei & Alich, 2000a, b; Minaei et al., 2001), Isfahan province (Ghahhari & Hatami, 2000), Kerman province (Kheyrandish Koshkoei et al., 2000a; Teraz & Kheyrandish Koshkoei, 2002), Khorasan-e-Shomali province (Alavi & Kamali, 2003), Khuzestan province (Cheragian, 1996; Cheraghian & Hojat, 1998; Bagheri & Mosadegh, 2000; Bagheri et al., 2002; Bagheri et al., 2005b).

***Aeolothrips intermedius* Bagnall, 1934**

Material examined: Shiraz, 1 female, on *Raphanus* sp. (Brassicaceae), 17.iv.2009; Fasa, 1 male, female, on *Vicia faba* L. (Fabaceae), 15.v.2009.

Distribution: Asia, Europe, North Africa, Oriental region on the most of bushes of flower and vegetables (zur Strassen, 2003; Fauna Europaea Web Service, 2004).

Iranian records: Tehran, Golestan and Mazandaran provinces (Mortazawiha & Dern, 1977); Khuzestan province (Cheraghian & Hojat, 1998; Bagheri et al., 2005b) Kerman province (Kheyrandish Koshkoei et al., 2000b, Teraz & Kheyrandish Koshkoei, 2002), Fars province (Minaei & Alich, 2001; Minaei et al., 2001), Tehran and Markazi provinces (Jalili Moghadam & Azmayesh Fard, 2004).

***Aeolothrips modestus* zur Strassen, 1965**

Material examined: Shiraz, 1 female, 4 male, on *Bassia scoparia* (L.) A. J. Scott (Chenopodiaceae), 22.v.2009.

Distribution: Canary Islands on flowers (zur Strassen, 2003), **New record for Iran fauna.**

***Aeolothrips mongolicus* Pelikán, 1985**

Material examined: Fasa, 1 male, on *Medicago sativa* L. (Fabaceae), 15.v.2009; Beyza, 1 male, on *Medicago sativa* L., 01.vi.2009.

Distribution: East Palaearctic (Alavi et al., 2007).

Iranian records: Khuzestan province (Cheraghian & Hojat, 1998), Golestan province (Alavi, 2004; Alavi et al., 2007), Khorasan-e-Shomali (Alavi & Kamali, 2003).

***Aeolothrips tenuicornis* Bagnall, 1926**

Material examined: Marvdasht, 1 female, 4 male, on *Triticum aestivum* L. (Poaceae), 31.v.2009.

Distribution: Andorra, Britain Island, Canary Islands, French mainland, Germany, Italian mainland, Malta, Portuguese mainland, Selvagens Islands, Sicily, Spanish mainland, Switzerland, The Netherlands, Ukraine, Near East, North Africa on *Vitis*, Citrus and flower bushes (zur Strassen, 2003; Fauna Europaea Web Service, 2004).

Iranian records: Tehran and Qom provinces (Mortazawiha & Dern 1977), Fars province (Minaei & Alich 2000a, b; Minaei et al., 2001; Minaei et al., 2002), Khuzestan province (Cheraghian & Hojat, 1998; Bagheri et al., 2005b) Golestan province (Alavi et al., 2007).

Genus *Melanthrips* Haliday, 1836***Melanthrips fuscus* (Sulzer, 1776)**

Material examined: Marvdasht, 1 female, on *Hirschfeldia incana* (L.) Lagr.-Foss. (Brassicaceae), 04.v.2009; 1 male, Shiraz, on *Raphanus* sp. (Brassicaceae), 17.iv.2009.

Distribution: Europe, East Palaearctic, Near East, Nearctic region, North Africa on Cruciferae and the other families of plants (Priesner, 1964b; Fauna Europaea Web Service, 2004).

Iranian records: Golestan province (Mortazawiha & Dern, 1977); Khuzestan province (Cheraghian, 1996; Cheraghian & Hojat, 1998), Kerman province (Kheyrandish Koshkoei et al., 2000b, Fars province (Minaei & Alich 2000a), Khuzestan province (Bagheri et al., 2002) Bagheri et al., 2005b, Tehran and Markazi provinces (Jalili Moghadam & Azmayesh Fard, 2004).

Terebrantia: Thripidae**Genus *Anaphothrips* Uzel, 1895*****Anaphothrips obscurus* (Müller, 1776)**

Material examined: Fars province: Marvdasht, 1 female, 2 male, on *Triticum aestivum* L. (Poaceae), 31.v.2009.

Distribution: Europe, Australian region, East Palaearctic, Near East, Nearctic region, Neotropical region, North Africa, Oriental region on the Weeds and different kinds of bushes (zur Strassen, 2003; Fauna Europaea Web Service, 2004).

Iranian records: Khorasan-e-Shomali province (Alavi & Kamali, 1995; Alavi & Kamali, 2003), Golestan province (Alavi & zur Strassen, 2002).

***Anaphothrips sudanensis* Trybom, 1911**

Material examined: Fars province: Beyza, 1 female, on *Allium cepa* L. (Liliaceae) 01.vi.2009; 1 male, Fasa, on *Triticum aestivum* L. (Poaceae), 01.v.2009.

Distribution: Europe (Cyprus, Spanish mainland), Afro-tropical region, Australian region, East Palaearctic, Near East, Neotropical region, North Africa, Oriental region on the different species plants as *Urochloa maxima* (Jacq.) R. Webster (Poaceae), *Pennisetum* sp. (Poaceae), *Sorghum halepense* (L.) Pers. (Poaceae), *Zea mays* L. (Poaceae) (zur Strassen, 2003; Fauna Europaea Web Service, 2004).

Iranian records: Khorasan-e-Shomali province (Alavi & Kamali, 1995), Fars province (Minaei & Alich, 2000a; Minaei et al., 2002), Golestan province (Gilasian et al., 2000; Alavi & zur Strassen, 2002; Alavi et al., 2007), Kerman province (Kheyrandish Koshkoei et al., 2000a; Teraz & Kheyrandish Koshkoei, 2002), Khuzestan province (Behdad, 1996; Cheraghian & Hojat, 1998; Bagheri et al., 2005a).

Genus *Frankliniella* Karny, 1910

***Frankliniella tenuicornis* (Uzel, 1895)**

Material examined: Marvdasht, 1 female, on *Triticum aestivum* L. (Poaceae), 31.v.2009.

Distribution: Europe, East Palaearctic, Near East, Nearctic region, North Africa (Palmer et al. 1992; zur Strassen, 2003; Fauna Europaea Web Service, 2004).

Iranian records: Khorasan-e-Shomali province (Alavi & Kamali, 1995; Alavi & Kamali, 2003). Fars province (Minaei & Alich, 2000a; Minaei et al., 2002), Golestan province (Gilasian et al., 2000; Alavi & zur Strassen, 2002; Alavi, 2004), Isfahan province (Etebari & Hesami, 2002), Marekazi province (Ghotbi et al., 2003), Tehran province (Ghotbi et al., 2003; Jalili Moghadam & Azmayesh Fard, 2004).

Genus *Limothrips* Haliday, 1836

***Limothrips angulicornis* Jablonowski, 1894**

Material examined: Marvdasht, 5 male, on *Triticum aestivum* L. (Poaceae), 31.v.2009.

Distribution: Europe, Australian region, East Palaearctic, Near East, Nearctic region, Neotropical region, North Africa on Hordeum sp. and various species of Poaceae (Priesner, 1964a, zur Strassen, 2003; Fauna Europaea Web Service, 2004).

Iranian records: Khorasan-e-Shomali province (Alavi & Kamali, 1995; Alavi & Kamali, 2003). Golestan province (Gilasian, 2000); Azarbaijan e-Gharbi province (Akbarzadeh Shoukat & Shayesteh, 2006), Kerman province (Kheyrandish Koshkoei et al., 2000a), Khuzestan province (Cheraghian, 1996; Cheraghian & Hojat, 1998).

Genus *Microcephalothrips* Bagnall, 1926

***Microcephalothrips abdominalis* (D. L. Crawford, 1910)**

Material examined: Shiraz, 13 female, on *Tagetes lucida* Cav. (Asteraceae), 16.x.2009.

Distribution: Europe (Canary Islands, Italian mainland, Slovenia), Afro-tropical region, Australian region, Near East, Nearctic region, Neotropical region, North Africa, Oriental region on Astereceae and Chenopodiaceae plants (Priesner, 1964a; Mound & Kibby, 1998; Fauna Europaea Web Service, 2004).

Iranian records: Khuzestan (Cheraghian & Hojat, 1998; Bagheri et al., 2002), Golestan (Gilasian et al., 2000), Tehran provinces (Jalili Moghadam & Azmayesh Fard, 2004), Markazi province (Ghotbi et al., 2005), Mazandaran province (Minaei et al., 2007).

Genus *Odontothrips* Amyot & Serville, 1843

***Odontothrips confusus* Priesner, 1926**

Material examined: Shiraz, 6 female, 2 male, on *Glyssyrhiza glabra* L. (Fabaceae), 09.v.2009; Shiraz, 4 female, 2 male, on *Sophora alopecuroides* L. (Fabaceae), 09.v.2009; Shiraz, 1 male, on *Sisymbrium irio* L. (Brassicaceae), 28.iii.2009; Maharloo, 1 male, on

Glyssyrhiza glabra L. (Fabaceae), 15.v.2009; Sepidan, 1 male, on *Astragalus* sp. (Fabaceae), 25.vii.2009.

Distribution: Europe, East Palaearctic, Near East (Fauna Europaea Web Service, 2004).

Iranian records: Tehran province (Mortazawiha & Dern, 1977; Pirafkan *et al.*, 2006), Kerman province (Teraz & Kheyrandish Koshkoei, 2002), Lorestan province (Jafari & Fallahzadeh, 2004).

Genus *Tenothrips* Bhatti, 1967

Tenothrips frici (Uzel, 1895)

Material examined: Shiraz, 1 female, on *Triticum aestivum* L. (Poaceae), 22.v.2009.

Distribution: Semi-cosmopolitan: Europe, Australian region, East Palaearctic, Near East, Nearctic region, Neotropical region, North Africa, Oriental region (Fauna Europaea Web Service, 2004).

Iranian records: Iran (Davatchi, & Taghizadeh, 1954), Golestan province (Gilasian *et al.*, 2000) Fars province (Minaei & Alich 2000a), Khuzestan province (Bagheri & Alavi, 2006).

Genus *Thrips* Linnaeus, 1758

Thrips meridionalis (Priesner, 1926)

Material examined: Shiraz, 3 female, on *Raphanus* sp. (Brassicaceae), 17.iv.2009; Shiraz, 1 female, on *Raphanus* sp., 28.iv.2009; Shiraz, 1 female, on *Raphanus* sp. 26.iii.2009; Shiraz, 1 female, on *Lepidium draba* L. (Brassicaceae), 01.iv.2009; Shiraz, 1 female, on *Ligustrum vulgare* L. (Oleaceae), 25.v.2009; Shiraz, 1 female, on *Sisymbrium irio* L. (Brassicaceae), 28.iii.2009; Shiraz, 1 female, on *Sisymbrium irio* L., 25.v.2009; Shiraz, 1 female, on *Vaccaria hispanica* (Mill.) Rauschert (Caryophyllaceae), 17.iv.2009; Shiraz, 1 female, on *Malcolmia africana* (L.) W. T. Aiton (Brassicaceae), 28.iii.2009; Shiraz, 1 female, on *Hirschfeldia incana* (L.) Lagr.-Foss. (Brassicaceae), 09.v.2009; Marvdasht, 1 female, on *Lepidium draba* L. (Brassicaceae), 14.iv.2009; Marvdasht, 1 female, on *Brassica napus* L. (Brassicaceae), 24.iv.2009; Sepidan, 1 female, on *Lepidium draba* L. (Brassicaceae), 24.iv.2009; Maharloo, 3 female, on *Glyssyrhiza glabra* L. (Fabaceae), 15.v.2009.

Distribution: Europe, East Palaearctic, Near East on the bushes of flowers as Rosaceae and Fabaceae and trunk of trees (zur Strassen, 2003; Fauna Europaea Web Service, 2004).

Iranian records: Fars province (Priesner, 1954; Minaei & Alich, 2000a; Minaei, 2002; Minaei *et al.*, 2002; Alemansour & Fallahzadeh, 2004), Golestan province (Mortazawiha & Dern, 1977; Gilasian *et al.*, 2000, Alavi *et al.*, 2007), Kerman province (Kheyrandish Koshkoei *et al.*, 2000a; Teraz & Kheyrandish Koshkoei, 2002), Khorasan-e-Shomali province (Alavi & Kamali, 2003), Khuzestan province (Cheraghian & Hojat, 1998), Lorestan province (Jafari & Fallahzadeh, 2004), Tehran province (Mortazawiha & Dern, 1977; Jalili Moghadam & Azmayesh Fard, 2004), Yazd province (Mohaghegh & Kheyrandish Koshkoei, 2002).

Thrips tabaci Lindeman, 1889

Material examined: Shiraz, 1 female, on *Sisymbrium irio* L. (Brassicaceae), 28.iii.2009; Shiraz, 4 female, on *Raphanus* sp. (Brassicaceae), 17.iv.2009; Shiraz, 3 female, on *Reseda lutea* L. (Resedaceae), 17.iv.2009; Shiraz, 1 female, on *Tagetes lucida* Cav. (Asteraceae), 10.viii.2009; Marvdasht, 1 female, on *Hirschfeldia incana* (L.) Lagr.-Foss. (Brassicaceae), 24.iv.2009; Marvdasht, 2 female, on *Lepidium draba* L. (Brassicaceae), 04.v.2009; Marvdasht, 1 female, on *Allium cepa* L. (Liliaceae), 31.v.2009.

Distribution: Cosmopolitan (zur Strassen, 2003; Fauna Europaea Web Service, 2004).

Iranian records: Iran (Afshar, 1938; Salavatian, 1959; Farahbakhsh, 1961; Shojai, 1971; Zahedi, 1992; Modarres Awal, 1994), Azarbaijan-e-Gharbi province (Akbarzadeh Shokat & Rezwani, 1998; Akbarzadeh Shoukat & Shayesteh, 2006), Azarbaijane-Sharghi province (Hassan-Zadeh Salmasi, 1997; Mashhadi Jafarlo & Malkeshi, 2000; Mansouri, *et al.*, 2004; Taghizadeh *et al.*, 2004), Fars province (Javan Moghadam *et al.*, 2000; Noori *et al.*, 2000; Minaei *et al.*, 2002; Alemansour & Fallahzadeh, 2004), Gilan province (Etebari *et al.*, 2000), Golestan province (Gilasian, 2000; Alavi & zur Strassen, 2002; Mojeni, 2002; Alavi, 2004; Khormaly, 2004; Alavi *et al.*, 2007), Hamadan province (Khanjani & Mirab Baluo 2005a, b), Isfahan province (Seyedoleslami & Naderi, 1993; Etebari & Hesami, 2002;

Kalafchi et al., 2002; Saeidi et al., 2002), Kerman province (Moharrampour et al., 2000; Teraz & Kheyrandish Koshkoei, 2002), Khorasan-e-Janubi province (Moodi, 2002; Shahrokhi, & Rahimi, 2003; Rahimi et al., 2004), Khorasan-e-Razavi province (Noori et al., 2000; Javan Moghadam et al., 2000), Khorasan-e-Shomali province (Alavi & Kamali, 2003), Khuzestan province (Cheraghian, 1996; Cheraghian & Hojat, 1998; Bagheri & Mosadegh, 2000; Bagheri et al., 2002; Bagheri et al., 2005b, c), Lorestan province (Jafari & Fallahzadeh, 2004), Markazi province (Yousefi & Abbasifar, 2004), Mazandaran province (Farahbakhsh, 1961), Tehran province (Davatchi, 1949; Farahbakhsh, 1961; Shojai, 1989; Javan Moghadam et al., 2000; Mirkarimi, 2000; Noori et al., 2000; Hosseininia & Malkeshi, 2004; Jalili Moghadam & Azmayesh Fard, 2004; Khani et al., 2004), Yazd province (Mohaghegh & Kheyrandish Koshkoei, 2002).

***Thrips trybomi* (Karny, 1908)**

Material examined: Shiraz, 3 male, on *Vaccaria hispanica* (Mill.) Rauschert (Caryophyllaceae), 17.iv.2009.

Distribution: Europe, East Palaearctic on different kind of bushes particularly Tomato's bushes (zur Strassen, 2003; Fauna Europaea Web Service, 2004), **New record for Iran fauna.**

Tubulifera: Phlaeothripidae

Genus *Haplothrips* Amyot & Serville, 1843

***Haplothrips flavitibia* Williams, 1916**

Material examined: Shiraz, 1 female, on *Vitis vinifera* L. (Vitaceae), 30.v.2009.

Distribution: Europe: Britain Island, Germany, Spanish mainland (Mound et al., 1976; Fauna Europaea Web Service, 2004).

Iranian records: Kerman province (Kheyrandish Koshkoei et al., 2000a; Teraz & Kheyrandish Koshkoei, 2002), Fars province (Minaei & Alich 2001, Minaei et al., 2001), Khorasan Province (Alavi & Kamali 2003), Khuzestan province (Bagheri & Alavi, 2006), Tehran province (Pirafkan et al., 2006).

***Haplothrips ganglbaueri* Schmutz, 1913**

Material examined: Shiraz, 3 female, on *Tagetes lucida* Cav. (Asteraceae), 15.x.2009.

Distribution: South-East Asia on Rice flowers and panicles (Tillekaratn et al., 2007).

Iranian records: Iran (Mortazawiha, 1995), Khuzestan province (Cheraghian and Hojat 1998; Bagheri & Alavi, 2006), Fars Province (Minaei and Alich 2001), Kerman province (Teraz & Kheyrandish Koshkoei, 2002), Khorasan province (Alavi & Kamali 2003), Tehran Province (Pirafkan et al. 2006), Fars and Tehran provinces (Minaei and Mound, 2008).

DISCUSSION

The result of this research and also that of many other researchers, which were conducted on the fauna of Iranian Thysanoptera, indicate that there is a diverse fauna of thrips in Iran. With attention to the prior papers and 4 new records of this paper, the total number of Iranian thrips reaches to 181 species. The number of species probably will increase in the future, because Iran is a large, poorly explored, incorporating various geographical regions, climates, and vegetation zones. We are convinced that additional field work will provide numerous new and interesting records.

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