

Hoverfly fauna (Diptera: Syrphidae) of Torbat-e Heydarie with a new record for the fauna of Razavi Khorasan province

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The present study, during 2010-2011 was carried out in Torbat-e Heydarie (Razavi Khorasan Province). Adult specimens were collected randomly with butterfly net. A totally, 28 species belong to 14 genus, two subfamilies were identified. All species are recorded for the first time from the studied area.

Key words: Hoverfly, Khorasan province, fauna, Iran, Diptera

INTRODUCTION

The hover flies or flower flies (Diptera: Syrphidae) are common in all areas from the Arctic to the Antarctic (Rotheray & Gilbert, 1999). About 6000 species in 200 genera and 40 tribes have been described (Thompson & Rotheray, 1998), and has been divided into three subfamilies: Microdontinae, Eristalinae and Syrphinae (Sommagio, 1999).

The adults mainly feed on nectar and pollen. The females must consume pollen since they need the proteins and amino acids of the pollen for maturation of their eggs. Nectar has only a small amount of these substances but much sugar. It is the fuel for the flies, enabling them to fly and hover actively. Being regular visitors of flowers, hoverflies are important pollinators of various plants including vegetables and fruit trees (Ghahari *et al.*, 2008)

In addition, the larva of numerous species of hover flies, particularly subfamily of Syrphinae, are one of the most important predators of aphids and other pests which play important roles in their biological control (Gilbert, 1981). The Iranian syrphid fauna contain almost 188 species belong to 52 genera has been studied by some taxonomists: Farahbakhsh, 1961; Kuznetzov, 1985; Peck, 1988; Modarres awal, 1994; Melkeshi *et al.*, 1998; Gol Mohammad Zadeh Khiaban, 2000; Dousti, 2000; Gharali, 2000; Poor Rabi, 2000; Musavian, 2001; Sadeghi, 2001; Azarkhsh, 2001; Poor Ghasem, 2001; Keyvanfar & Sadeghi, 2002; Goldasteh, 2002; Sadeghi, 2003; Sadeghi, Kayvanfar & Jajvandan, 2006; Amiri Moghadam, 2004; Gilasian, 2005; Dousti *et al.*, 2006; Mehrabi *et al.*, 2006; Kayvanfar & Bagherian, 2006; Hosseini & Sadeghi, 2007; Ghahari *et al.*, 2008; Ashraphi & Pashaei Rad, 2010; Khaghaninia, 2010; Ehteshamnia *et al.*, 2010; Jalilian *et al.*, 2010; Gilasian & Sorokina, 2011; Ahmadian & Pashaei Rad, 2012; Kazerani *et al.*, 2012; Vosughian *et al.*, 2013; Khaghaninia & Hosseini, 2013; Kazerani *et al.*, 2014; Jalilian, 2014.

The Syrphid fauna of Razavi Khorasan province contain almost 39 species belong to 17 genera has been studied by: Musavian, 2001; Sadeghi, 2001; Keyvanfar & Sadeghi, 2002; Sadeghi & Keyvanfar, 2002; Sadeghi, 2003; Amiri Moghadam, 2004; Sadeghi, Kayvanfar & Jajvandan, 2006; Kayvanfar & Bagherian, 2006; Hosseini & Sadeghi, 2007. Torbat-e Heydarie city (35°16'N 59°14'E) is located in the center of Razavi Khorasan Province (Fig. 1) (Nami, 2010).



FIGURE 1. Torbat-e Heydarie city (35°16'N 59°14'E) in Razavi Khorasan province.

Material and Methods

Three sampling localities include: Hesar, Robat Sang and Safi Abad have been shown in Table 1. Species collection is done in four durations: 5-16 May 2010, 11-22 July 2010, 4-16 September 2010 and 5-16 May 2011. In this research, species are collected by a butterfly net with two random and sporadic ways. The best time for species collection is 7-10 am and 4-7 pm.

The collected insects were killed using killing jar then transferred to the laboratory, were pinned and were identified by valid keys such as Vockeroth & Thompson (1981), Bei-Bienko (1988), Stubbs & Falk (2002), Sorokina (2009), Speight (2010). Identifications were confirmed by Dr. Barkalov from Institute of Animal Systematics and Ecology (Russia).

RESULTS

A total of 526 specimens belong to 28 species, 14 genera and two subfamilies were identified, of which nine genera belong to the subfamily Syrphinae and five genera belong to subfamily Eristalinae. All species are recorded for the first time from Torbat-e Heydarie city. *Neoascia oblique* (Coe, 1940) was a new record for the fauna of Razavi Khorasan province.

SPECIES LIST

Subfamily Syrphinae

Chrysotoxum bicinctum Linnaeus, 1758

Material examined: 5 specimens (2♂♂, 3♀♀), Hesar, 5-16 May 2010 (2 specimens), 4-16 September 2010 (3 specimens), *leg.* Elahe Shojaei.

Flowers visited: white umbellifers; *Achillea ptarmica*, *Alisma plantago-aquatica*, *Carduus* sp., *Crataegus* sp., *Hypochoeris* sp., *Potentilla erecta*, *Ranunculus* sp., *Rubus* sp. (Speight, 2011).

Distribution in Iran: Razavi Khorasan (Sadeghi, Kayvanfar & Jajvandan, 2006).

Episyrphus balteatus De Geer, 1776

Material examined: 102 specimens (43♂♂, 59♀♀), Hesar (67 specimens), Robat Sang (20 specimens), Safi Abad (15 specimens), 5-16 May 2010 (38 specimens), 11-22 July 2010 (17 specimens), 4-16 September 2010 (25 specimens), 5-16 May 2011 (22 specimens), *leg.* Elahe Shojaei.

Flowers visited: visits a wide range of white and yellow flowers, from trees to low-growing plants and including nectar less flowers; also visits pink flowers such as *Cirsium* sp. and *Succisa* sp.. In October/ November the species uses flowers of plants such as *Arbutus unedo*, *Hedera* sp. and *Viburnum tinus* (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Fars, Gilan, Golestan, Gorgan, Hamedan, Ilam, Isphahan, Kerman, Khuzestan, Lorestan, Maraghe, Mazandaran, Qazvin, Razavi Khorasan, Sistan and Baluchistan, West Azerbaijan (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007; Jalilian *et al.*, 2010; Vosughian *et al.*, 2013).

***Eupeodes corollae* Fabricius, 1794**

Material examined: 83 specimens (35♂♂, 48♀♀), Hesar (40 specimens), Robat Sang (26 specimens), Safi Abad (17 specimens), 5-16 May 2010 (19 specimens), 11-22 July 2010 (10 specimens), 4-16 September 2010 (17 specimens), 5-16 May 2011 (37 specimens), *leg.* Elahe Shojaei.

Flowers visited: Umbellifers; *Achillea millefolium*, *Campanula rapunculoides*, *Chrysanthemum* sp., *Cirsium* sp., *Eschscholzia californica*, *Galeopsis* sp., *Hypericum* sp., *Leontodon* sp., *Origanum vulgare*, *Potentilla erecta*, *Ranunculus* sp., *Rubus fruticosus*, *Salix* sp., *Senecio* sp., *Tripleurospermum inodorum*, *Tussilago* sp. (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Fars, Golestan, Gorgan, Hamedan, Ilam, Isphahan, Khuzestan, Maraghe, Mazandaran, North Khorasan, Qazvin, Razavi Khorasan, Semnan, Sistan and Baluchistan, Tehran, West Azerbaijan, Zanjan (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007; Jalilian *et al.*, 2010; Vosughian *et al.*, 2013).

TABLE 1. Sampling station properties.

Number of station	Station	geographic coordinate	Mean Temperature	Mean Humidity	Plant species	Specimens collected
1	Hesar	35°41'N 58°80'E	24°C	41.5	<i>Astragalus cancellatus</i> <i>Gundelia tournefortii</i> <i>Descurainia Sophia</i> <i>Convolvulus</i> sp. <i>Acanthophyllum</i> sp.	272
2	Robat Sang	35°55'N 59°20'E	25°C	34	<i>Convolvulus</i> sp. <i>Mentha</i> sp. Poacea <i>Trifolium</i> sp. <i>Medicago</i> sp.	132
3	Safi Abad	35°29'N 59°63'E	35°C	28	<i>Convolvulus</i> sp. <i>Alhagi</i> sp. <i>Oryza</i> sp. <i>Prosopis farcta</i>	122

***Eupeodes latifasciatus* Macquart, 1829**

Material examined: 7 specimens (2♂♂, 5♀♀), Hesar (4 specimens), Safi Abad (3 specimens), 5-16 May 2010 (3 specimens), 5-16 May 2011 (4 specimens), *leg.* Elahe Shojaei.

Flowers visited: White umbellifers; *Caltha* sp., *Convolvulus* sp., *Euphorbia* sp., *Prunus padus*, *Ranunculus* sp., *Salix repens*, *Taraxacum* sp., *Tussilago* sp., *Ulex* sp. (Speight, 2011).

Distribution in Iran: Gilan, Isphahan, Maraghe, Semnan, Tehran (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007; Vosughian *et al.*, 2013)

***Eupeodes luniger* Meigen, 1822**

Material examined: 2 specimens (2♀♀), Robat Sang (2 specimens), 5-16 May 2011 (2 specimens), *leg.* Elahe Shojaei.

Flowers visited: White Umbelliferae; *Calluna* sp., *Leontodon* sp., *Malus sylvestris*, *Polygonum cuspidatum*, *Prunus spinosa*, *Ranunculus* sp., *Rosa rugosa*, *Senecio* sp., *Taraxacum* sp. (Speight, 2011).

Distribution in Iran: Fars, Golestan, Maraghe, Mazandaran, Sistan and Baluchistan (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007; Vosughian *et al.*, 2013).

***Eupeodes nuba* Wiedemann, 1830**

Material examined: 53 specimens (22♂♂, 31♀♀), Hesar (33 specimens), Robat Sang (5 specimens), Safi Abad (15 specimens), 5-16 May 2010 (19 specimens), 11-22 July 2010 (7 specimens), 4-16 September 2010 (10 specimens), 5-16 May 2011 (17 specimens), *leg.* Elahe Shojaei.

Flowers visited: yellow composites; *Viburnum tinus* (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Fars, Gorgan, Gilan, Ilam, Khuzestan, Razavi Khorasan (Kashmar, Mashhad and Neyshabor), Semnan, Sistan and Baluchistan, Tehran (Sadeghi, Kayvanfar and Jajvandan, 2006; Gilasian, 2007; Ehteshamnia *et al.*, 2010; Jalilian *et al.*, 2010).

***Ischiodon (Simosyrphus) scutellaris* Fabricius, 1805**

Material examined: 10 specimens (3♂♂, 7♀♀), Robat Sang (2 specimens), Safi Abad (8 specimens), 5-16 May 2010 (7specimens), 5-16 May 2011 (3specimens), *leg.* Elahe Shojaei.

Flowers visited: *Citrullus colocynthis*, *Diplotaxis barra*, *Fagonia indica*, *Reichardia* sp. (Speight, 2011).

Distribution in Iran: Fars, Hormozgan, Kerman, Khuzestan (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007).

***Melanostoma mellinum* Linnaeus, 1758**

Material examined: 4 specimens (1♂, 3♀♀), Hesar (4 specimens), 4-16 September 2010 (2 specimens), 5-16 May 2011 (2 specimens), *leg.* Elahe Shojaei.

Flowers visited: Graminae; Cyperaceae; white Umbelliferae; *Allium ursinum*, *Bellis perennis*, *Caltha* sp., *Eschscholzia californica*, *Euphorbia* sp., *Leontodon* sp., *Luzula* sp., *Plantago* sp., *Ranunculus* sp., *Salix repens*, *Stellaria holostea*, *Succisa* sp., *Taraxacum* sp. (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Gilan, Gorgan, Ilam, Khuzestan, Maraghe, Mazandaran (Sadeghi, Kayvanfar & Jajvandan, 2006; Jalilian *et al.*, 2010; Vosughian *et al.*, 2013).

***Paragus albifrons* Fallen, 1817**

Material examined: 8 specimens (3♂♂, 5♀♀), Hesar (4 specimens), Robat Sang (3 specimens), Safi Abad (1 specimen), 11-22 July 2010 (3 specimens), 4-16 September 2010 (5 specimens), *leg.* Elahe Shojaei.

Flowers visited: umbellifers; *Ranunculus* sp., *Sambucus ebulus*, *Veronica* sp. (Speight, 2011).

Distribution in Iran: East Azerbaijan, Ilam, Tehran (Ehteshamnia *et al.*, 2010; Jalilian *et al.*, 2010; Ahmadian & Pashaei Rad, 2012).

***Paragus bicolor* Fabricius, 1794**

Material examined: 20 specimens (5♂♂, 15♀♀), Hesar (3 specimens), Robat Sang (9 specimens), Safi Abad (8 specimens), 5-16 May 2010 (4 specimens), 11-22 July 2010 (5 specimens), 4-16 September 2010 (7 specimens), 5-16 May 2011 (4 specimens), *leg.* Elahe Shojaei.

Flowers visited: *Euphorbia* sp., *Herniaria glabra*, *Potentilla* sp., *Sedum* sp., *Scleranthus* sp., *Solidago* sp. (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Gilan, Gorgan, Ilam, Khuzestan, Kordestan, Maraghe, North Khorasan, Razavi Khorasan (Kashmar, Mashhad and Neyshabor), Semnan, West Azerbaijan (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007; Ehteshamnia *et al.*, 2010; Jalilian *et al.*, 2010; Khaghaninia and Hosseini, 2013; Vosughian *et al.*, 2013).

***Paragus haemorrhous* Meigen, 1822**

Material examined: 2 specimens (2♀♀), Hesar (1specimen), Safi Abad (1 specimen), 11-22 July 2010 (2 specimens), *leg.* Elahe Shojaei.

Flowers visited: umbellifers; *Calluna* sp., *Jasione montana*, *Matricaria* sp., *Origanum* sp., *Polygonum* sp., *Potentilla anserina*, *P. erecta*, *P. fruticosa*, *Solidago* sp., *Stellaria* sp. (Speight, 2011).

Distribution in Iran: East Azerbaijan, Fars, Gilan, Kordestan, Maraghe, Razavi Khorasan (Mashhad) (Sadeghi, Kayvanfar & Jajvandan, 2006; Ehteshamnia *et al.*, 2010; Khaghaninia & Hosseini, 2013; Vosughian *et al.*, 2013)

***Paragus quadrifasciatus* Meigen, 1822**

Material examined: 3 specimens (3♀♀), Robat Sang (2 specimens), Safi Abad (1 specimen), 11-22 July 2010 (2 specimens), 4-16 September 2010 (1 specimens), *leg.* Elahe Shojaei.

Flowers visited: yellow composites (Speight, 2011).

Distribution in Iran: East Azerbaijan, Ilam, Kordestan, Razavi Khorasan (Mashhad and Neyshabor), Semnan (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007; Jalilian *et al.*, 2010).

***Paragus tibialis* Fallen, 1817**

Material examined: 3 specimens (3♀♀), Robat Sang (3 specimens), 5-16 May 2010 (1 specimen), 4-16 September 2010 (2 specimens), *leg.* Elahe Shojaei.

Flowers visited: *Jasione montana*, *Potentilla* sp., *Salix repens* (Speight, 2011).

Distribution in Iran: East Azerbaijan, Kordestan, Maraghe, Mazandaran, Tehran, Zanjan (Sadeghi, Kayvanfar & Jajvandan, 2006; Khaghaninia & Hosseini, 2013; Vosughian *et al.*, 2013).

***Scaeva albomaculata* Macquart, 1842**

Material examined: 2 specimens (2♀♀), Hesar (2 specimens), 5-16 May 2010 (2 specimens), *leg.* Elahe Shojaei.

Flowers visited: *Cytisus* sp., *Senecio* sp., *Thapsia* sp. (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Gorgan, Ilam, Isfahan, Kerman, Khuzestan, Razavi Khorasan (Mashhad), Tehran (Gilasian, 2007; Sadeghi, Kayvanfar & Jajvandan, 2006; Ehteshamnia *et al.*, 2010; Jalilian *et al.*, 2010).

***Scaeva latimaculata* Brunetti, 1923**

Material examined: 2 specimens (1♂♂, 1♀♀), Robat Sang (2 specimens), 4-16 September 2010 (2 specimens), *leg.* Elahe Shojaei.

Flowers visited: yellow composites (Speight, 2011).

Distribution in Iran: East Azerbaijan, Gorgan, Ilam, Kerman, Razavi Khorasan (Kashmar), Sistan and Baluchistan (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007; Jalilian *et al.*, 2010).

***Sphaerophoria rueppelli* Wiedemann, 1830**

Material examined: 23 specimens (8♂♂, 15♀♀), Hesar (10 specimens), Robat Sang (9 specimens), Safi Abad (4 specimens), 5-16 May 2010 (4 specimens), 11-22 July 2010 (3 specimens), 4-16 September 2010 (7 specimens), 5-16 May 2011 (9 specimens), *leg.* Elahe Shojaei.

Flowers visited: yellow composites; *Asparagus* sp., *Aster* sp., *Limonium* sp., *Matricaria* sp., *Polygonum* sp., *Ranunculus* sp., *Rumex* sp., *Sinapis* sp., *Tamarix* sp. (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Fars, Gorgan, Ilam, Khuzestan, Mazandaran, Razavi Khorasan (Kashmar and Mashhad), Semnan, Sistan and Baluchistan, West Azerbaijan (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007; Ehteshamnia *et al.*, 2010; Jalilian *et al.*, 2010).

***Sphaerophoria scripta* Linnaeus, 1758**

Material examined: 58 specimens (21♂♂, 37♀♀), Hesar (30 specimens), Robat Sang (11 specimens), Safi Abad (17 specimens), 5-16 May 2010 (19 specimens), 11-22 July 2010 (4 specimens), 4-16 September 2010 (10 specimens), 5-16 May 2011 (25 specimens), *leg.* Elahe Shojaei.

Flowers visited: white umbellifers; *Achillea* sp., *Campanula rapunculoides*, *Cirsium arvense*, *Crataegus* sp., *Erigeron* sp., *Eschscholzia californica*, *Euphorbia* sp., *Leontodon* sp., *Origanum vulgare*, *Prunus spinosa*, *Ranunculus* sp., *Tripleurospermum inodorum*, *Tussilago* sp. (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Fars, Gilan, Golestan, Gorgan, Hamedan, Ilam, Isphahan, Khuzestan, Maraghe, Mazandaran, North Khorasan, Qazvin, Razavi Khorasan (Kashmar, Mashhad and Neyshabor), Sistan and Baluchistan, West Azerbaijan (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007; Jalilian *et al.*, 2010; Vosughian *et al.*, 2013).

***Sphaerophoria turkmenica* Bankowska, 1964**

Material examined: 47 specimens (17♂♂, 30♀♀), Hesar (31 specimens), Robat Sang (9 specimens), Safi Abad (7 specimens), 5-16 May 2010 (14 specimens), 11-22 July 2010 (4 specimens), 4-16 September 2010 (6 specimens), 5-16 May 2011 (23 specimens), *leg.* Elahe Shojaei.

Flowers visited: no data (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Fars, Gorgan, Ilam, Isphahan, Khuzestan, Mazandaran, North Khorasan, West Azerbaijan (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007; Jalilian *et al.*, 2010).

***Syrphus ribesii* Linnaeus, 1758**

Material examined: 1 specimen (1♀), Robat Sang (1 specimen), 5-16 May 2010 (1specimens), *leg.* Elahe Shojaei.

Flowers visited: visits a wide range of yellow, white, pink and blue flowers, including composites and umbellifers and the flowers of many trees and shrubs (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Fars, Gorgan, Hamedan, Isfahan, Maraghe, Mazandaran, Razavi Khorasan (Kashmar and Mashhad), Sistan and Baluchistan, Tehran (Sadeghi, Kayvanfar & Jajvandan, 2006; Gilasian, 2007; Vosughian *et al.*, 2013).

Subfamily Eristalinae

***Eristalinus aeneus* Scopoli, 1763**

Material examined: 6 specimens (2♂♂, 4♀♀), Hesar (2 specimens), Robat Sang (1 specimen), Safi Abad (3 specimens), 5-16 May 2010 (2 specimens), 5-16 May 2011 (4 specimens), *leg.* Elahe Shojaei.

Flowers visited: yellow composites, white umbellifers, *Aster* sp., *Berteroa incana*, *Cistus* sp., *Origanum* sp., *Salix repens*, *Taraxacum* sp. (Speight, 2011).

Distribution in Iran: East Azerbaijan, Gilan, Gorgan, Hamedan, Ilam, Khuzestan, North Khorasan, Razavi Khorasan (Kashmar, Mashhad and Neyshabor), Semnan, West Azerbaijan (Sadeghi, Kayvanfar & Jajvandan, 2006; Jalilian *et al.*, 2010).

***Eristalinus taenoips* Wiedemann, 1818**

Material examined: 1 specimen (1♀), Hesar (1 specimen), 5-16 May 2011 (1specimen), *leg.* Elahe Shojaei.

Flowers visited: umbellifers; *Calluna vulgaris*, *Cistus* sp., *Daphne* sp., *Eryngium* sp., *Hedera* sp., *Mentha* sp., *Rubus* sp., *Senecio* sp., *Solidago* sp. (Speight, 2011).

Distribution in Iran: East Azerbaijan, Gorgan, Khuzestan, Ilam (Sadeghi, Kayvanfar & Jajvandan, 2006; Jalilian *et al.*, 2010)

***Eristalis arbustorum* Linnaeus, 1758**

Material examined: 12 specimens (4♂♂, 8♀♀), Hesar (3 specimens), Robat Sang (5 specimens), Safi Abad (4 specimens), 5-16 May 2010 (3 specimens), 4-16 September 2010 (2 specimens), 5-16 May 2011 (7 specimens), *leg.* Elahe Shojaei.

Flowers visited: visits the flowers of a wide range of low-growing plants and shrubs (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Gilan, Gorgan, Hamedan, Ilam, Isphahan, Khuzestan, Mazandaran, Razavi Khorasan (Mashhad and Neyshabor), Semnan, Sistan and Baluchistan, West Azerbaijan (Sadeghi, Kayvanfar & Jajvandan, 2006; Jalilian *et al.*, 2010).

***Eristalis tenax* Linnaeus, 1758**

Material examined: 2 specimens (2♀♀), Safi Abad (2 specimens), 5-16 May 2011 (2 specimens), *leg.* Elahe Shojaei.

Flowers visited: visits a wide range of flowers, including white, yellow, pink and blue blooms (Speight, 2011).

Distribution in Iran: Ardebil, East Azerbaijan, Gilan, Gorgan, Hamedan, Ilam, Khuzestan, Mazandaran, Razavi Khorasan (Mashhad and Neyshabor), Semnan, West Azerbaijan (Sadeghi, Kayvanfar & Jajvandan, 2006; Jalilian *et al.*, 2010).

***Eumerus sogdianus* Stackelberg, 1952**

Material examined: 5 specimens (1♂, 4♀♀), Hesar (2 specimens), Robat Sang (1 specimen), Safi Abad (2 specimens), 11-22 July 2010 (2 specimens), 4-16 September 2010 (2 specimens), 5-16 May 2011 (1 specimens), *leg.* Elahe Shojaei.

Flowers visited: white umbellifers; *Sedum acre* (Speight, 2011).

Distribution in Iran: Ilam, West Azerbaijan (Sadeghi, Kayvanfar & Jajvandan, 2006; Jalilian *et al.*, 2010).

***Eumerus strigatus* Fallen, 1817**

Material examined: 3 specimens (3♀♀), Hesar (2 specimens), Robat Sang (1 specimen), 11-22 July 2010 (1 specimen), 4-16 September 2010 (2 specimens), *leg.* Elahe Shojaei.

Flowers visited: umbellifers; *Allium ursinum*, *Convolvulus* sp., *Eschscholzia californica*, *Euphorbia* sp., *Fragaria* sp., *Leontodon* sp., *Papaver* sp., *Potentilla erecta*, *Ranunculus* sp., *Sonchus arvensis*, *Taraxacum* sp. (Speight, 2011).

Distribution in Iran: Kerman, Tehran (Sadeghi, Kayvanfar & Jajvandan, 2006).

***Eumerus tuberculatus* Rondani, 1857**

Material examined: 5 specimens (2♂♂, 3♀♀), Hesar (2 specimens), Robat Sang (3 specimens), 5-16 May 2010 (1 specimens), 11-22 July 2010 (2 specimens), 4-16 September 2010 (2 specimens), *leg.* Elahe Shojaei.

Flowers visited: *Euphorbia* sp., *Fragaria* sp., *Leucanthemum* sp., *Ranunculus* sp. (Speight, 2011).

Distribution in Iran: Gorgan (Sadeghi, Kayvanfar & Jajvandan, 2006).

***Neoascia oblique* Coe, 1940**

Material examined: 1 specimen (1♀), Hesar (1 specimen), 5-16 May 2011(1 specimen), *leg.* Elahe Shojaei.

Flowers visited: white umbellifers; *Galium* sp., *Ranunculus* sp., *Taraxacum* sp. (Speight, 2011).

Distribution in Iran: East Azerbaijan, Kordestan (Khaghaninia & Hosseini, 2013).

***Syrirta pipiens* Linnaeus, 1758**

Material examined: 56 specimens (22♂♂, 34♀♀), Hesar (25 specimens), Robat Sang (17specimens), Safi Abad (14 specimens), 5-16 May 2010 (16 specimens), 11-22 July 2010 (11specimens), 4-16 September 2010 (13specimens), 5-16 May 2011 (16 specimens), *leg.* Elahe Shojaei.

Flowers visited: white umbellifers; *Achillea* sp., *Allium* sp., *Aster* sp., *Calluna* sp., *Cardamine* sp., *Cirsium palustre*, *Convolvulus* sp., *Crataegus* sp., *Epilobium* sp., *Euphorbia* sp., *Galium* sp., *Jasione montana*, *Leontodon* sp., *Polygonum cuspidatum*, *Potentilla erecta*, *Prunus laurocerasus*, *Ranunculus* sp., *Rosa canina*, *Senecio jacobaea*, *Sorbus aucuparia*, *Tussilago* sp. (Speight, 2011).

Distribution in Iran: Ardebil, Gilan, Gorgan, Ilam, Isphahan, Khuzestan, Mazandaran, Razavi Khorasan (Mashhad and Neyshabor), Semnan (Sadeghi, Kayvanfar & Jajvandan, 2006; Jalilian *et al.*, 2010).

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