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Faunistic study on hover flies (Diptera:Syrphidae) in the eastern part of Zanjan province, Iran

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Abstract

In order to study on Syrphidae faunistic in the eastern part of Zanjan province in the years of 2008 and 2009, some adult specimens were collected and identified. In total, 31 species belong to 16 genus from 2 subfamilies were collected. Among the specimens, 28 species as follow are new records for Zanjan province and the species marked with an asterisk is the first record from Iran.

Subfamily: Syrphinae

Spazigaster ambulans (Fabricius,1798)*, *Melanostoma mellinum* (Linnaeus ,1758), *Platycheirus* sp., *Paragus albifrons* (Fallen, 1817), *Paragus bicolor* (Fabricius, 1794), *Paragus abrogans* Goeldlin de Tiefenau, 1971, *Sphaerophoria rueppelli* (Wiedemann,1830), *Sphaerophoria scripta* (Linnaeus, 1758), *Sphaerophoria turkmenica* Bankowska, 1964, *Ischiodon scutellaris* (Fabricius, 1805), *Scaeva pyrastri* (Linnaeus,1758), *Scaeva albomaculata* (Macquart, 1842), *Episyrphus balteatus* (DeGeer, 1776), *Eupeodes nuba* (Wiedemann, 1830), *Meliscaeva auricollis* (Meigen, 1822).

Subfamily: Milesiinae

Eumerus strigatus (Fallen, 1817), *Eumerus sogdianus* Stackelberg, 1952, *Helophilus continuus* Loew, 1854, *Eristalis tenax* (Linnaeus, 1758), *Eristalis arbustorum* (Linnaeus, 1758), *Eristalis similis* Fallen, 1817, *Eristalinus taeniops* (Wiedemann, 1818), *Eristalinus megacephalus* (Rossi, 1794), *Eristalinus sepulchralis* (Linnaeus, 1758), *Eristalinus aeneus* (Scopoli, 1763), *Pipizella divicoi* (Goeldlin de Tiefenau, 1974), *Neoascia podagrica* (Fabricius, 1775), *Syritta pipiens* (Linnaeus, 1758).

Key words: Fauna, Syrphidae, New record, Zanjan, Iran

Introduction

The Syrphidae family, commonly named hover flies or flower flies, comprises almost 6000 species worldwide and is one of the largest families of Diptera (Kuznetsov, 2002). Many of the species are distinguishable by their suspended flight above flowers and sharply changing of direction (Howard, 1954). Their size varies from 4 to 35 mm and can be distinguished from other groups of similar flies by the special venation of the wings having one long basal cell, closed apical cells and spurious vein which is located between veins radial (R_{4+5}) and median (M_{1+2}). Most adult hover flies are black with bright spots or bands of white, yellow, orange or red (Speight, 2008a). Many species resemble the Hymenoptera such as Vespidae and Apoiedae, they can make themselves look like dangerous model species in such a way that predators usually avoid them (Golding *et al*., 2005).

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The adult feed on nectar and pollen of flowering plants. Therefore, they are valuable pollinators of flowering plants (Speight, 2008a).

Compared with adults, larvae have heterogeneous alimentary habits. Larval feeding modes of Syrphidae include phytophagous (*Eumerus* Meigen and *Merodon* Meigen), mycetophagous (*Chelosia* Meigen), saprophagous (most Milesiinae), zoophagous (Syrphinae and Pipizini). Aphidophagous hoverflies are important as biological control agents of various aphids (Sommaggio, 1999).

Hover flies can be found everywhere except in dry area. The habitats of adult and larvae can be variant. Adult syrphid flies can be collected where they feed on flowers, some in places where they oviposit and where they hover in sunlight or rest on foliage (Stubbs & Falk, 1996).

Iran with a diversity in climatic conditions ranging from dry and hot areas to cold and wet locations can be excepted to be rich in the fauna of Syrphidae but the numbers of the identified species are too limited and many parts seem to be absolutely unworked. But it must be mentioned that in recent years many studies have been carried out by Modaress Awal, 1997; Khiaban *et al*., 1998; Dousti, 1999; Gharali *et al*., 2000; 2002; Goldasteh *et al*., 2002; Sadeghi *et al*., 2002; Pourrabi *et al*., 2003; Amirimoghaddam, 2004; Golmohammadi & Khiaban, 2004; Kamangar *et al*., 2004; Moetamedi ni *et al*., 2004; Gilasian, 2005; 2007; Gilasian & Sorokina, 2011; Najafi, 2007; Khaghaninia *et al*., 2010. Checklists of Iranian hover flies were listed by Peck, 1988; Sadeghi, 2003; Dousti & Hayat, 2006.

Zanjan province, in northwest of Iran, is located in 35°35' to 37°15'N; 47°15' to 49°25'E with varying altitude from 270 m to 3400m. This region has a highland climate characterized by cold snowy weather in the mountains and moderate climate in the plains in wintertime. In the summers, the weather is warm. The average maximum temperature of Zanjan is around 27°C, whereas the average minimum temperature stands at -19°C. Meanwhile, the temperature rises to 32°C on hot days, whereas it drops to -27°C on icy days. The average annual rainfall in the first month of spring stands at 72 millimeters, while in the second month of summer, it slips to a meager 3.6 mm. The rate of humidity in the morning stands by average at 74% and at noon at 43%. Unfortunately, as the Syrphid fauna of this region has not been introduced yet, this paper is going to study it specifically.

Material and Methods

Adult specimens were collected with sweep net in different periods between May and September 2008-2009 from eight localities in the eastern part of Zanjan province (Table 1). Geographical characteristics of sampling stations were determined by GPS. The majority of specimens were collected particularly from Asteraceae, Malvaceae, Rosaceae and Brassicaceae. The specimens used for identification fixed by 00, 0, 1 and 2 mounted pins and the others were put into tubes filled with 70% alcohol. The collected materials were determined by different keys especially Stubbs & Falk, 1996; Sack, 1932; Bei-Bienko, 1998. The identified specimens were sent to Dr.Barkalov (Siberian Zoological Museum) for confirmation.

Most of the specimens are deposited in the private collection of the author; a few species are deposited at Siberian Zoological Museum, Russian.

Table 1- Geographical and vegetation characteristics of sampling stations

Locality	vegetation	Latitude	Longitude	Altitude
Sayan	Fruit garden around Zanjan Rood river	36°38'N	48°32'E	1637m
Taham	woodland(almost Salix) near Taham dam	36°47'N	48°33'E	1875m
Kheir Abad	Canola, sunflower and bean fields	36°31'N	48°45'E	1770m
Amid Abad	apple garden and around grassland	36°20'N	49°01'E	1775m
Qaleh hosseineh	Wheat field and around grassland	36°14'N	49°01'E	1626m
Gilvan	Olive garden and rice field	36°49'N	49°05'E	350m
Sojas	Alfalfa field	36°13'N	48°35'E	1820m
Dehjalal	Apricot and walnut gardens	36°16'N	48°42'E	2015m

Results

Examination of the specimens led to identification of 31 species belonging to 16 genera from two subfamilies collected from the eastern part of Zanjan province. Species marked with an asterisk are reported from the province for the first time and the genus and species *Spazigaster ambulans* (Fabricius) are newly recorded from Iran.

Subfamily: Syrphinae

1. *Episyrphus balteatus (De Geer, 1776)**

Material examined: Sayan, 19. vii.2008, 5 ♂, 3♀; 5.v.2009,2♀, 16 .vi.2009, 2♀; Taham, 23 vii.2008, 1♂, 3♀, 20. vi.2009, 3♀; Kheir Abad, 18.vii.2008, 9♀, 6♂; 15.vi.2009, 3♂, 9♀; Sojas, 22.vii.2008, 5♂, 4♀; 19.vi.2008, 1♀; Amid Abad, 20.vii.2008, 1♂, 17.vi.2009 2♀, Qaleh hosseineh, 21.vii.2008, 21♂, 13♀; 7.v.2009, 2♀, 18 .vi.2009, 24♂, 19♀, Gilvan, 11.v.2009, 1♂, 1♀.

Distribution in world: Fennoscandia to the Mediterranean; Canary Isles, Azores and N Africa; Ireland through Eurasia to the Pacific coast; south through the Oriental region to Sri Lanka; Australia, Iran (Speight, 2008b).

2. *Eupeodes corollae* (Fabricius, 1794)

Material examined: Sayan,19.vii.2008, 7♂, 3♀; 5.v.2009, 5♂, 3♀, 16.vi.2009, 1♀; Taham , 23, Vii.2008, 11♂, 3♀, 20.vi.2009, 2♂, 11♀; Kheir Abad, 18.vii.2008, 13♂, 18♀; 4.v.2009, 3♂, 9♀, 15. vi.2009, 5♀; Sojas, 22.vii.2008, 6♂, 3♀, 8.v.2009, 1♂, 1♀; Dehjalal,10.v.2009, 17♂,25♀; Amid Abad, 17.vi.2009,3♀; Qaleh hosseineh, 20.vii.2008, 7♂, 3♀; 17.vi.2009, 4♂, 14♀; Gilvan, 22.vi. 2009, 3♂, 2♀.

Distribution in world: From Iceland, Fennoscandia and the Faroes south to Iberia, the Mediterranean, Madeira, the Canary Isles and N Africa; coastal States of Africa down to and including S Africa; Mauritius; from Ireland eastwards through most of Europe into European parts of Russia; through Siberia from the Urals to the Pacific coast; Japan; China; Formosa, Iran (Speight, 2008b).

3. *Eupeodes nuba* (Weidmann, 1830) *

Material examined: Taham, 9.v.2009, 3♂, 4♀, 20.vi.2009, 4♂, 6♀; Dehjalal, 10.v.2009, 2♂,4♀; 21.vi.2009,2♂,5♀; Amid Abad, 6.v.2009,3♀; Gilvan,11.v.2009,2♂,2♀.

Distribution in world: Canary Isles, Mediterranean basin, from southern France to Italy (Sicily) and parts of the former Yugoslavia, Crete, Cyprus, Lebanon, Israel, Egypt and Morocco; Switzerland in central Europe, Roumania; Transcausasus and south-western parts of Asia (Uzbekistan, Kirghizistan, Tajikistan) to Afghanistan and Mongolia. In eastern parts of the Afrotropical region from Ethiopia south to South Africa, Iran (Speight, 2008b).

4. *Ischiodon scutellaris* (Fabricius, 1805) *

Material examined: Sayan, 16.vi.2009, 1♀; Gilvan 6.ix.2008, 3♂, 2♀, 22.vi.2009, 1♀.

Distribution in world: Turkey; southern, Asiatic parts of the Palaearctic from Iran to Japan; Oriental Region; Oceania; Australasian Region(Speight, 2008b).

5. *Meliscaeva auricollis* (Meigen, 1822) *

Material examined: Taham, 22 .vi.2009, 1♀.

Distribution in World: Fennoscandia and the Faroes south to Iberia, the Mediterranean (including Cyprus, Malta and Crete), Canary Isles, N Africa, Turkey and Israel; Ireland eastwards through most of Europe into European parts of Russia (Speight, 2008b).

6. *Scaeva pyrastri* (L., 1758) *

Material examined: Kheir Abad, 18.vii.2008, 1♂.

Distribution in the world: Fennoscandia south to Iberia, the Mediterranean, Canary Isles and North Africa; from Ireland east through much of Europe and Asia Minor into European Russia;

through Siberia from the Urals to the Pacific coast; India; China; North America from Alaska to California and New Mexico. Iran (Speight, 2008b).

7. *Scaeva albomaculata (Macquart, 1842)**

Material examined: Dehjalal, 10.v.2009, 4♀; Amid Abad, 6.v.2009, 1♀.

Distribution in World: Iberian Peninsula and round the Mediterranean basin to Morocco; Canary Islands; eastward through southern Russia, the Caucasus and southern Siberia to the Far East and northern China; Afghanistan, Mongolia; highly migratory and occasionally reaches as far north as Britain, Iran (Speight, 2008b).

8. *Sphaerophoria scripta* (Linnaeus, 1758) *

Material examined: Sayan,19.vii.2008, 2♂, 4♀, 30.viii.2008, 3♀; 5.v.2009, 2♀; 16.vi.2009, 3♂; Taham, 23.vii.2008, 2♂, 1♀, 4.ix.2008, 1♀, 9.v.2009, 1♂; 20.vi.2009, 1♂; Kheir Abad, 18.vii.2008, 5♂, 4♀, 29.viii.2008, 3♀; Sojas,22.vii..2008, 11♂, 9♀, 3. ix.2008, 6♂; 19.vi.2009, 13♀, 10♂; Dehjalal,10.v.2009, 2♂, 1♀; Amid Abad,1.ix.2008, 1♂, 17.vi.2009, 1♀; Qaleh hosseineh, 21.vii.2008, 2♂, 5♀; 7.v.2009, 11♂, 9♀; Gilvan,6.ix.2008, 13♂, 11.v.2009, 20♀, 19♂.

Distribution in World: southwest Greenland, Iceland and Fennoscandia south to the Mediterranean, the Canary Isles and N Africa; from Ireland eastwards through much of the Palaearctic to the Pacific coast of Asia; Kashmir and Nepal, Iran (Speight, 2008b).

9. *Sphaerophoria turkmenica* Bankowska , 1964 *

Material examined: Taham, 23.vii.2008, 2♂; 20.vi.2009, 3♂; Dehjalal,10.v.2009, 2♂, 1♀; 20.vii.2008, 2♂, 3♀.

Distribution in World: Romania, USSR-South European territory, Transcaucasia, Soviet Middle Asia, Afghanistan and Turkey, Iran (Speight, 2008b).

10. *Sphaerophoria rueppelli* (Wiedemann, 1830) *

Material examined: Sayan,19.vii.2008, 2 ♂, 16.vi.2009, 1♀; Amid Abad,1.ix.2008, 1♂; 17.vi.2009, 1♀; Gilvan,25.vii.2008, 4♂, 6.ix.2008, 7♂, 5♀.

Distribution in the world: From southern Norway and Sweden south to North Africa and the Canary Isles; from Ireland east through central and southern Europe, including Greece, Turkey and Mediterranean islands into Asia Minor, Russia and Afghanistan and on to the Pacific coast , China and Korea; in eastern parts of the Afrotropical region south to Kenya, Iran (Speight, 2008b).

11. *Melanostoma mellinum* (Linnaeus, 1758) *

Material examined: Sayan,30.viii.2008, 2♂, 2♀; Dehjalal,24.vii.2008, 3♂; 21.vi.2009, 2♂, 3♀, Qaleh hosseineh, 2.ix.2008, 2♀, Gilvan,22.vi.2009, 1♂, 1♀.

Distribution in World: From Iceland and Fennoscandia south to Iberia, the Mediterranean and North Africa; from Ireland eastwards through most of Europe into European parts of Russia; Siberia from the Urals to the Pacific coast; North America from Alaska to Quebec and south to Washington, Iran (Speight, 2008b).

12. *Spazigaster ambulans* (Fabricius, 1798)

Material examined: Taham, 20.vi.2009, 1♂, 1♀

Description: Arista plumose, with pile more than twice as long as aristal width; face black with fine light brown hairs (Fig. 1-a). Eyes bare, Thorax black, the male abdomen black (Fig. 1-b) whilst that of the female shiny orange (Fig. 1-c). Abdomen distinctly petiolate in the female but less obvious in the male, tergite 2 narrower than 3 in the male. The hind femur slightly thickened; hind tibia of the male very noticeable by its deep incision ventrally (Fig. 1-d).

Distribution in world: The distribution of this species covers high mountain ranges in the Palaearctic region such as Alps, Apennines, Carpathians, and the Caucasus. Occurrences are known from Germany, Switzerland, Hungary, Romania, Poland, France, Italy, Former Yugoslavia,

Russian SFSR, Ukrainian SSR, Moldavia, Azerbaijan, Georgia, Armenia and Turkey (Peck, 1988; Speight, 2008b).

13. ***Platycheirus*** **sp***

Material examined: Dehjalal, 21.vi.2009, 1♀.

14. ***Paragus (Paragus) bicolor*** **(Fabricius,1794) ***

Material examined: Sayan,19.vii.2008, 1♂, 1♀; Taham,20.vi.2009, 1♀; Kheir Abad ,15.vi.2009, 1♂, 2♀; Qaleh hosseineh, 18.vii.2008, 2♂, 2♀.

Distribution in World: From Belgium (extinct) south to the Mediterranean and North Africa; from France eastwards through central and southern Europe to Mongolia; Iran and Afghanistan; North America, Iran (Speight, 2008b).

15. ***Paragus(Paragus) quaderfasciatus*** **Meigen, 1822**

Material examined: Kheir Abad, 18.vii.2008, 2♂.

Distribution in world: From northern France (Brittany) south to the Mediterranean and North Africa; from Portugal eastwards through southern and central Europe to Roumania, Greece (including Crete and Rhodes), Turkey, Iran and the Caucasus; European parts of Russia eastwards through Kazakhstan, Tajikistan etc. to the far east; northern China, Korea, Japan, Iran (Speight, 2008b).

16. ***Paragus (Paragus) compeditus*** **(Wiedemann, 1830)**

Material examined: Gilvan, 6.ix.2008, 1♂, 3♀; 22.vi.2009, 2♂.

Distribution in world: USSR-South European territory, Transcaucasus, Kazakhstan, Soviet Middle Asia, Iran, Afghanistan, North China, Egypt, Turkey, Iran.

17. ***Paragus (Paragus) albifrons*** **(Fallen, 1817) ***

Material examined: Qaleh hosseineh, 21.vii.2008, 1♂.

Distribution in the world: From southern Norway and Denmark south to the Mediterranean; from Britain (southern England) eastwards through central and southern Europe (Italy, the former Yugoslavia, Bulgaria) into European parts of Russia and the Caucasus and on to the Pacific; Iran, Afghanistan and Mongolia, Turkey, Iran (Speight, 2008b).

18. Paragus**(*****Pandasyophthalmus) abrogans*** **Goeldlin de Tiefenae, 1971 ***

Material examined: Qaleh hosseineh, 21.vii.2008, 3♂.

Distribution in the world: Greece, Turkey, Iran. Probably also known from Kyrgyzstan, Tajikistan, Turkmenistan and Uzbeckistan (Speight, 2008b).

Subfamily: Milesiinae

19. ***Eumerus strigatus*** **(Fallen, 1817) ***

Material examined: Sayan, 16.vi.2009, 1♂.

Distribution in the world: Fennoscandia south to Iberia and the Mediterranean; much of Europe through into Turkey and Russia; from the Urals to the Pacific coast (Sakhalin); Japan; introduced to N America and recorded from both Canada and the USA; introduced to both Australia and New Zealand (Speight, 2008b).

20. ***Eumerus sogdianus*** **Stackelberg, 1952 ***

Material examined: Kheir Abad, 18.vii.2008, 1♂, 15.vi.2009, 1♀; Dehjalal, 10.v.2009, 2♂; 21.vi.2009, 2♀.

Distribution in the world: Denmark south to southern Spain; from Belgium eastwards through central and southern Europe into European parts of Russia and into central Asia (Kazakhstan, Tajikistan, Uzbekistan, Mongolia); China, Iran (Speight, 2008b).

21. *Helophilus continuus* Loew, 1854 *

Material examined: Sayan, 16.vi.2009, 1♂.

Distribution in the world: Roumania (Danube delta), the Transcaucasus region and through Asiatic Russia to the Pacific (Speight, 2008b).

22. *Eristalis tenax* (Linnaeus, 1758) *

Material examined: Sayan,19.vii.2008, 3♂, 6♀, 30,viii.2008, 3♀, 5.v.2009, 2♀; 16.vi.2009, 8♂; Taham,23.vii.2008, 6♂, 4♀; 4.ix.2008, 1♀, 20.vi.2009, 1♂, 5♀; Kheir Abad,18.vii.2008, 1♂, 4♀, 29.viii.2008, 3♀; Sojas,22.vii.2008, 16♂, 9♀, 3.ix.2008, 9♂, 16♀; 19.vi.2009, 17♂, 12♀; Dehjalal,5.ix.2008, 3♂, 4♀, 10.v.2009, 2♂, 5♀; Amid Abad, 20.vii.2008, 15♂, 7♀, 1.ix.2008, 8♂, 12♀, 6.v.2009, 11♂, 6♀; Qaleh hosseineh,2.ix.2008, 2♂, 5♀, 7.v.2009, 8♂, 9♀.

Distribution in the world: known from all regions except the Antarctic; found throughout Europe except in the far north, Iran (Speight, 2008b).

23. *Eristalis arbustorum (Linnaeus, 1758)**

Material examined: Sayan, 19.vii. 2008, 2♂, 5♀, 30.viii. 2008, 1♂, 3♀, 16.vi. 2009, 2♀, 6♂; Taham, 23.vii.2008, 5♂, 2♀, 4.ix.2008, 4♀, 20.vi.2009, 5♂, 2♀; Sojas, 22.vii.2008, 16♂, 9♀, 3.ix.2008, 4♂, 3♀, 19.vi.2009, 12♂, 11♀; Dehjalal, 5.ix.2008, 6♀, 21.vi.2009, 4♂, 1♀, Amid Abad, 20.vii.2008, 2♂, 7♀, 1.ix.2008, 8♂, 3♀, 17.vi.2009, 2♂, 5♀.

Distribution in the world: Throughout the Palaearctic region, including North Africa; North America from Wisconsin to Labrador and south to Kansas and South Carolina; reaches the Orientalregion in northern India, Iran (Speight, 2008b).

24. *Eristalis similis* Fallen, 1817 *

Material examined: Sayan, 16.vi.2009, 1♂, 1♀, Amid Abad, 6.v.2009, 2♀.

Distribution in the world: Finland south to the Mediterranean basin (including islands such as Crete); N Africa; from Britain (central England) eastwards through central and southern Europe to the former Yugoslavia and on through Turkey and European Russia into Asia (Speight, 2008b).

25. *Eristalinus taeniops* (Wiedemann, 1818) *

Material examined: Sayan, 19.vii.2008, 1♀, 16.vi.2009, 1♀.

Distribution in the world: Portugal, Spain and round the Mediterranean basin (southern France including Corsica, Italy including Sardinia and Sicily, parts of the former Yugoslavia, Albania, Roumania, Cyprus, Greece (including Crete and Rhodes), Turkey, Lebanon, Israel, North Africa (Syria, Egypt, Libya, Tunisia, Morocco), Canary Islands, eastern parts of the Afrotropical region down to South Africa (inclusive) and in Nepal and parts of Pakistan and northern India in the Oriental region, Iran (Speight, 2008b).

26. *Eristalinus megacephalus* (Rossi, 1794) *

Material examined: Sayan, 16.v.2009, 1♀.

Distribution in the world: Southern Spain and coastal parts of Italy round the Mediterranean basin (including islands, e.g. Corsica, Malta, Sicily, Crete) to Turkey and on into Egypt and North Africa; southwards through the Afrotropical region to South Africa, Iran (Speight, 2008b).

27. *Eristalinus sepulchralis* (Linnaeus, 1758) *

Material examined: Sayan, 16.vi.2009, 11♂, 2♀.

Distribution in the world: Fennoscandia south to Iberia and the Mediterranean, including North Africa; from Ireland through most of Europe into Turkey and European parts of Russia; through Siberia to the Pacific coast; Japan; China; India, Iran (Speight, 2008b).

28. *Eristalinus aeneus* (Scopoli, 1763) *

Material examined: Sayan,19.vii.2008, 2♂, 3♀, 16.vi.2009, 2♀; Sojas, 22.vii.2008, 3♂, 1♀, 19.vi.2008, 2♂.

Distribution in the world: Cosmopolitan; southern Sweden south to N Africa and the Canary Isles; on into the Afrotropical region south to Kenya and Tanzania; from Ireland eastwards through central and southern Europe and on through Russia and China to the Pacific and south into the Oriental region; Mauritius; in North America from Minnesota and Ontario south to California and Texas; Hawaii, Australia and the Gilbert and Ellis islands in Australasia; Bermuda, Iran (Speight, 2008b).

29. *Pipizella divicoi* (Goeldlin de Tiefenae , 1974) *

Material examined: Sayan, 5.v.2009, 2 ♂, 5♀; Dehjalal, 10.v.2009, 2♀.

Distribution in the world: from the Netherlands south to the Mediterranean coast of Spain; from Belgium and northern France (Rhine valley) eastwards through central and southern Europe (Italy, the former Yugoslavia) to Turkey and European parts of Russia and on through Siberia to the Pacific coast; Mongolia (Speight, 2008b).

30. *Neoascia podagrica (Fabricius, 1775)**

Material examined: Sayan, 30.viii.2008, 2♂, 4♀.

Distribution in the world: From Fennoscandia south to Iberia and the Mediterranean, including Madeira, Cyprus and Crete; N Africa; from Ireland eastwards through northern, central and southern Europe (Italy, the former Yugoslavia, Greece) to Turkey and Israel; European parts of Russia and on into western Siberia, Iran (Speight, 2008b).

31. *Syritta pipiens* (Linnaeus, 1758) *

Material examined: Sayan,19.vii.2008, 5♂, 1♀, 16.vi.2009, 2♂, 2♀; Taham, 23.vii.2008, 1♂, 1♀, 9.v.2009, 2♀, 3♂; Amid Abad, 20.vii.2008, 1♂, 1♀, 17.vi.2009, 2♀.

Distribution in the world: Becoming cosmopolitan; known from most of the Palaearctic, including North Africa, most of North America, South America and the Oriental region. But records from the Afrotropical region are apparently erroneous, Iran (Speight, 2008b).

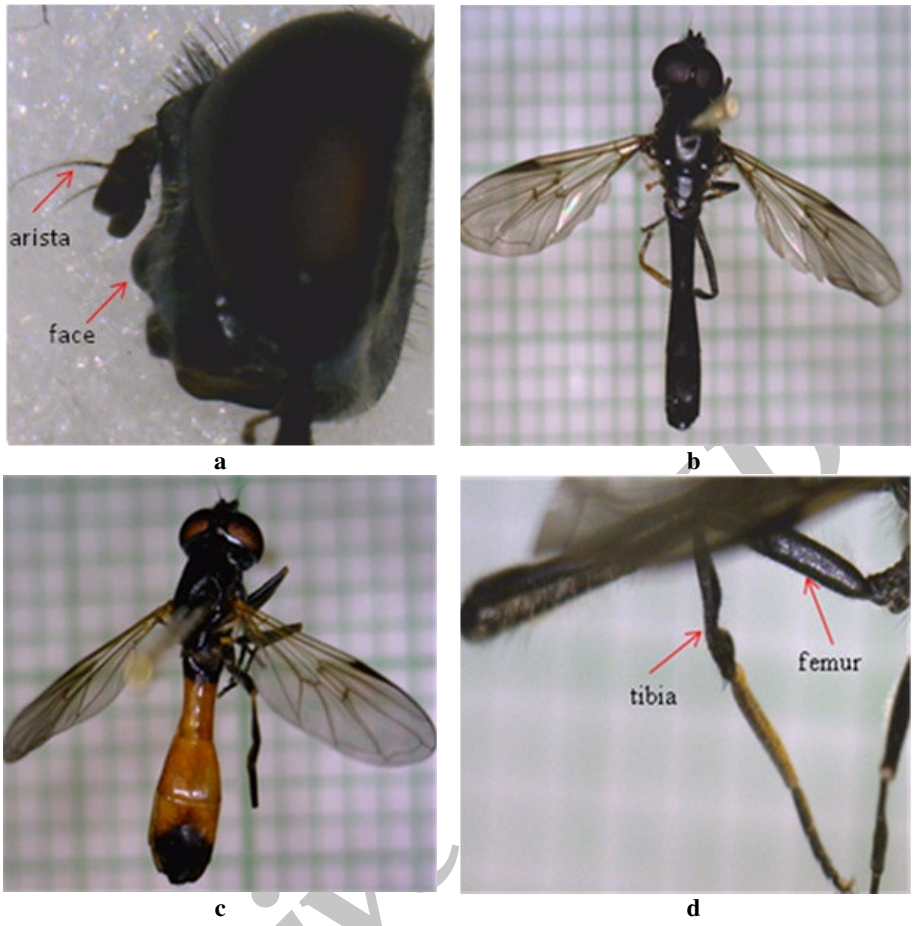

Fig. 1- Morphological characters of *Spazigaster ambulans*: a-male head in lateral view, b-male in dorsal view, c-female in dorsal view, d- male hind leg

Discussion

The results of faunistic investigation on Syrphid flies in the eastern part of Zanjan province indicated that the appropriate biological condition, vegetation and habitat diversity in the studying area leads to the present of wide range of species in this region. Among these species, *Eristalis tenax, Eupeodes corollae, Sphaerophoria scripta* are active in the most seasons and have long-flight period. Among the 31 species determined, Sayan with 19 species and Sojas with 6 species showed the highest and lowest degree of number of species respectively. Species belonging to the subfamily Syrphinae are abundant species in the research area and with 18 species have the most diversity that play an important role in the reduction of aphid populations in agroecosystems. Of these species, the larvae of 19 species (Subfamily Syrphinae and *Pipizella divicoi*) are aphidophagous, 2 species (*Eumerus* species) phyophagous and 10 species (most of Milesiinae) Saprophagous. It was expected because the major parts of the studying stations were agriculture ecosystems and gardens.

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بررسی فونستیک مگس‌های خانواده سیرفیده (Dip.,Syrphidae) در نیمه شرقی استان زنجان

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چکیده

به‌منظور مطالعه فونستیک مگس‌های خانواده سیرفیده طی سال‌های ۱۳۸۷ -۱۳۸۸در نیمه شرقی استان زنجان ، نمونه‌های بالغ این حشرات جمع‌آوری و شناسایی شدند. در مجموع، ۳۱ گونه، متعلق به ۱۶ جنس از دو زیرخانواده جمع آوری شدند. بین این نمونه‌ها، ۲۸ گونه به شرح زیر برای اولین بار از استان زنجان و نمونه مشخص شده با ستاره برای اولین بار از ایران گزارش می‌شود.

Subfamily: Syrphinae

*Spazigaster ambulans** (Fabricius,1798), *Melanostoma mellinum* (Linnaeus ,1758), *Platycheirus* sp, *Paragus albifrons* (Fallen,1817), *Paragus bicolor* (Fabricius,1794), *Paragus abrogans* Goeldlin de Tiefenau, 1971, *Sphaerophoria rueppelli* (Wiedemann, 1830), *Sphaerophoria scripta* (Linnaeus, 1758), *Sphaerophoria turkmenica* Bankowska, 1964, *Ischiodon scutellaris* (Fabricius, 1805), *Scaeva pyrastri* (Linnaeus, 1758), *Scaeva albomaculata* (Macquart, 1842), *Episyrphus balteatus* (DeGeer, 1776), *Eupeodes nuba* (Wiedemann,1830), *Meliscaeva auricollis* (Meigen,1822)

Subfamily: Milesiinae

Eumerus strigatus (Fallen, 1817), *Eumerus sogdianus* Stackelberg, 1952, *Helophilus continuus* Loew, 1854, *Eristalis tenax* (Linnaeus, 1758), *Eristalis arbustorum* (Linnaeus, 1758), *Eristalis similis* Fallen, 1817, *Eristalinus taeniops* (Wiedemann, 1818), *Eristalinus megacephalus* (Rossi, 1794), *Eristalinus sepulchralis* (Linnaeus, 1758), *Eristalinus aeneus* (Scopoli, 1763), *Pipizella divicoi* (Goeldlin de Tiefenau, 1974), *Neoascia podagrica* (Fabricius, 1775), *Syritta pipiens* (Linnaeus, 1758).

واژه‌های کلیدی: فون، سیرفیده، گزارش جدید، زنجان، ایران

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