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Taxonomic study of the marsh flies (Diptera: Sciomyzidae) in Iran

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ABSTRACT. A faunistic study of the family Sciomyzidae has been conducted in northern Iran. Material was collected using Malaise traps during 2010-2011 from different habitats in Guilan and Mazandaran provinces. Nine species were identified, of them *Elgiva cucularia* Linnaeus, 1767 and *Tetanocera ferruginea* Fallén 1820 are new records for the fauna of Iran. A key to the 28 currently known Iranian species of the family Sciomyzidae is given along with figures of informative characters.

Key words: Fauna, Northern Iran, Key, Sciomyzidae

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Introduction

The Sciomyzidae (marsh flies or snail-killing flies) have more than 540 described species in 60 recognized genera worldwide. Life cycles are known for 240 marsh flies species which makes this family amongst the best-known group of higher Diptera (Murphy *et al.*, 2012). Larvae display a wide range of feeding behaviors, including predation, parasitism or saprophagy of terrestrial and aquatic mollusks that have a considerable economic importance because of their pest status in agriculture (Chapman *et al.*, 2012). Mollusks are also intermediate hosts for a number of serious parasitic diseases of man-schistosomes and liver flukes. Sciomyzids are considered as a

potential biological control agents of these pests (Vala & Gasc, 1990).

Fauna of the family Sciomyzidae has been studied in most parts of the world. Here we mention some of the most important of them: Rozkošný (1984) studied fauna of Sciomyzidae in Fennoscandia and Denmark and provided a key for 83 species in 22 genera in this book. Rozkošný (1995) provided a world checklist of Sciomyzidae and their distributions based on biogeographic regions. Vala (1989) provided a comprehensive review of marsh flies in Euro-Mediterranean region. Rozkosny (1991) gave an important key to Palearctic species of the species-rich genus *Pherbellia*. Chapman *et al.* (2012) studied widespread

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and persistent invasions of terrestrial habitats coincident with larval feeding behavior transitions during snail-killing fly evolution. Knutson & Vala (2011) provided keys to world genera of sciomyzid flies along with extensive analysis of the family.

The first contribution to the fauna of Sciomyzidae in Iran was made by Ayatollahi (1971) that recorded the larvae of *Psacadina zernyi* (Mayer, 1953) from Iran. Later, seven new records of Iranian Sciomyzidae were published by Knutson *et al.* (1973) that were collected from Dezfoul, south of Iran. Yano (1978) during his studies on fauna and biology of the insect of paddy fields in Asia, reported two other species from Iran. Tirgari & Massoud (1978) reported larvae of *Sepedon sphegea* (Fabricius, 1775) from Khuzestan (south of Iran). Rozkošný & Elberg (1991) in catalogue of Palearctic Diptera mentioned another nine species from Iran. In the recent years more researchers studied Sciomyzidae fauna in Iran and added six species to the Iranian checklist (Motamedi *et al.*, 2006; Hamed *et al.*, 2016; Mohamadzade Namin *et al.*, 2015; Seddighi Sadr & Mohamadzade Namin, 2016; Mortelmans *et al.*, 2016; Khaghaninia & Kazerani, in press). As the fauna of the family Sciomyzidae has been poorly studied in Iran, the objective of the ongoing study is to initiate and facilitate further taxonomic studies on Iranian Sciomyzidae.

Material and methods

In this study, specimens have been collected from different habitats in northern Iran during 2010-2011 using Malaise traps. Samples were collected between March and August. The specimens were extracted from the Malaise traps and sorted weekly. Material was preserved in 75% Ethanol and then extracted and then dried and pinned after morphological examination and identification. Photographs were taken with an Olympus™ SZX9

stereomicroscope equipped with a Sony™ CX21 digital camera in Tarbiat Modares University and also with a Leica M205 stereomicroscope, with up to 160x magnification, facilitated by the LifeWatch observatories in the Flanders Marine Institute. Morphological terminology follows Vala & Leclercq (1981), Rozkošný (1984), Rozkošný (1991), Pape & Thompson (2013). The distributions of the species were mostly given using Rozkošný (1987). All the studied specimens are deposited in the insect collection of the Department of Entomology, Tarbiat Modares University, Tehran, Iran.

Results

In all, nine species were collected and identified of which two species (*Elgiva cucularia* Linnaeus, 1767 and *Tetanocera ferruginea* Fallén, 1820) are recorded for the first time from Iran. The species are listed below alphabetically and the newly recorded species marked with an asterisk.

Coremacera amoena (Loew, 1853)

Material examined: 1♂, Mazandaran province, Noor, Jurband, 36° 26' 17.28" N, 52° 07' 13.62" E, 272m, 13. IV. 2011; leg. M. Khayrandish.

Distribution: Palaearctic: South Europe, Turkey and Iran.

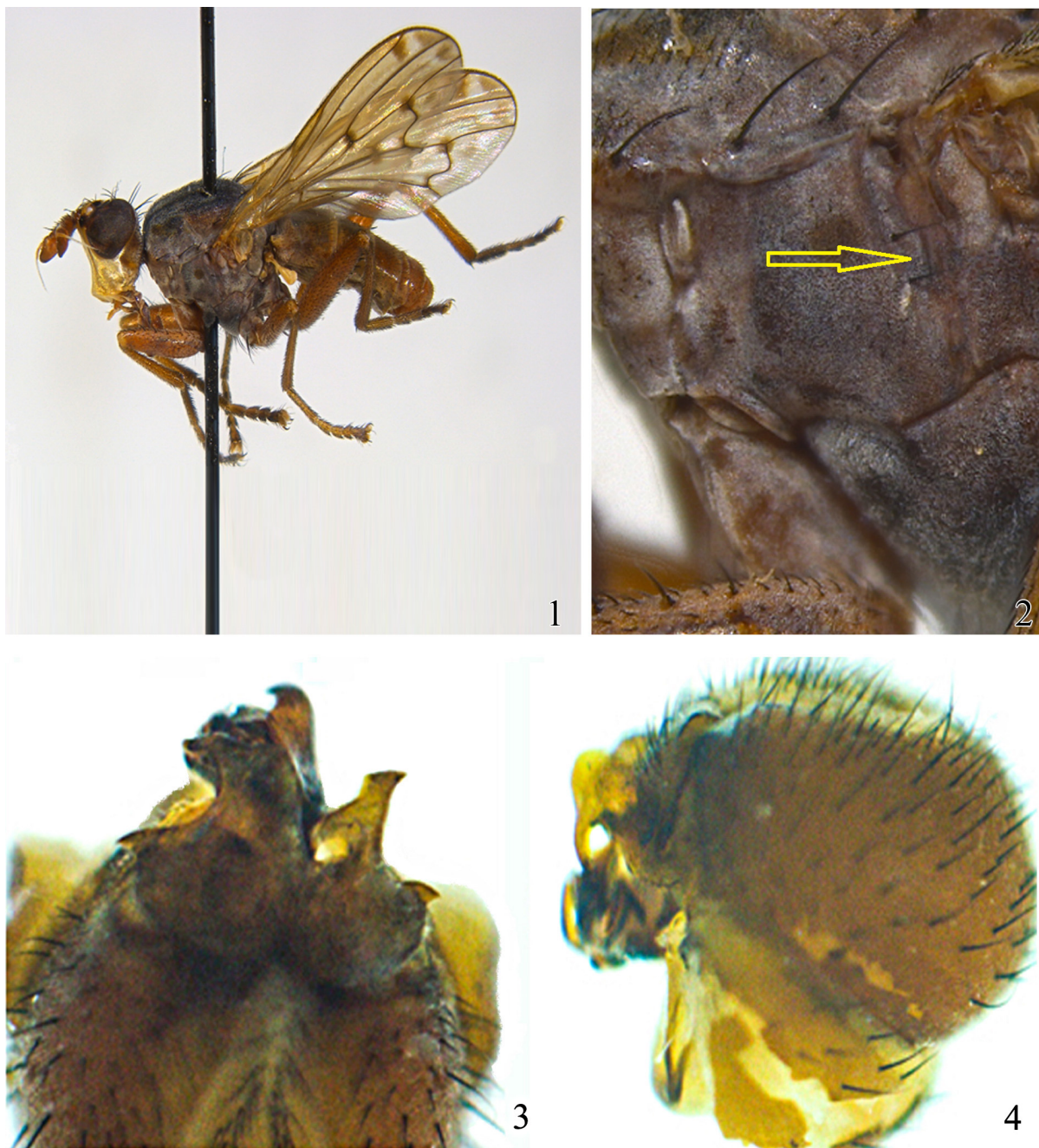
Coremacera marginata (Fabricius, 1775)

Material examined: 1♀, 2♂♂, Mazandaran province, Noor, Tangevaz, 36° 21' 55.2" N, 52° 06' 10.74" E, 692m; leg. M. Khayrandish.

Distribution: Palaearctic: from Ireland to Spain, France, Turkey, and European parts of Russia; Georgia; Armenia, Azerbaijan, Iran.

**Elgiva cucularia* Linnaeus, 1767

Material examined: 1♂, Mazandaran province, Noor, Tangevaz, 36° 21' 55.2" N, 52° 06' 10.74" E, 692m, 26.V.2011; leg. M. Khayrandish.



Figures 1-4. *Elgiva cucularia* Linnaeus, 1767 (male): **1.** Male habitus (lateral view); **2.** Mesopleuron (lateral view); **3.** Surstylus (Caudal view); **4.** Epandrium and surstylus (lateral view)

Distribution: Palearctic: from Ireland to Spain, France, Turkey, and European parts of Russia; Georgia; Armenia, Azerbaijan. **New record for Iran.**

Diagnostic characters: body yellowish-brown (Fig. 1); antenna brown (Fig. 1);

mesopleura with a bristle in addition to hairs (Fig. 2); wing yellowish, infuscate in anterior half with diffuse brown spots located at anterior cross-vein, at both or upper end of posterior cross-vein and at apex of wing (Fig. 1); Male genitalia:

surstylus asymmetrical (Fig. 3), in lateral view each with strongly curved and pointed apical part (Fig. 4).

***Euthycera stictica* (Fabricius, 1805)**

Material examined: 1♂, Guilan province, Rudsar, Ghazichak, 36° 45' 52.62'' N, 50° 20' 1.08'' E, 1787 m, 27.IX.2010; 3.X.2010; 2♀♀, 3♂♂, Rudsar, Orkom 36° 45' 44.34'' N, 50° 18' 11.88'' E, 1201 m, 7.VI.2010; 2♀♀, 4♂♂, Eshmankamachal, 37° 22' 3.66'' N, 49° 57' 57.84'' E, -1 m; leg. Nadimi.

Distribution: Europe: Spain, Czech Republic, Greece, Asia: Turkey and Iran.

***Pherbina coryleti* (Scopoli, 1763)**

Material examined: 1♀, Guilan province, Rudsar, Orkom, 36° 45' 44.34'' N, 50° 18' 11.88'' E, 1201 m, 12.IV.2010; leg. M. Khayrandish.

Distribution: Eurasian.

***Psacadina zernyi* Mayer, 1953**

Material examined: 1♂, Guilan province, Rudsar, Ziaz, 36° 52' 34.44'' N, 50° 13' 17.4'' E, 537 m, 3.V.2010; leg. M. Khayrandish.

Distribution: Europe, North Africa and in the Middle East to Iran.

***Sepedon sphegea* (Fabricius, 1775)**

Material examined: 2♀♀, Mazandaran province, Noor, Gaznasara, 36° 16' 58.44'' N, 52° 10' 58.5'' E, 2032 m, 12.VI.2011; leg. A. Nadimi.

Distribution: Palearctic including Japan.

****Tetanocera ferruginea* Fallén, 1820**

Material examined: 4♂♂, Guilan province, Rudsar, Ghazichak, 36° 45' 52.62'' N, 50° 20' 1.08'' E, 1787 m, 7.VI.2010; 1♀, Rudsar, Ziaz, 36° 52' 34.44'' N, 50° 13' 17.4'' E, 537 m, 3.V.2010; leg. Nadimi.

Distribution: Europe, Asia from Northern Kazakhstan to Russia and China. **New record for Iran.**

Diagnostic characters: 2nd antennal segment only slightly longer than half length of 3rd

(Fig. 6); wing slightly yellowish, darkened along cross-veins (Fig. 5); Male genitalia: surstylus geniculate (Fig. 7), long and pointed in lateral view and in ventral view rather flat apically (Fig. 8).

***Trypetoptera punctulata* (Scopoli, 1763)**

Material examined: 2♂♂, Guilan province, Rudsar, Ghazichak, 36° 45' 57.54'' N, 50° 19' 35.22'' E, 1803 m, 12.IV.2010; 3♂♂, 1♀, Rudsar, Ghazichak, 36° 45' 52.62'' N, 50° 20' 1.08'' E, 1787 m, 31.V.2010; 5♀♀, Rudsar, Orkom 36° 45' 44.34'' N, 50° 18' 11.88'' E, 1201 m, 12.IV.2010; 1♂, 1♀, Rudsar, Ziaz, 36° 52' 34.44'' N, 50° 13' 17.4'' E, 537 m, 3.V.2010; 3♂♂, Mazandaran province, Noor, Jurband, 36° 26' 17.28'' N, 52° 07' 13.62'' E, 272m, 13. IV. 2011; leg. M. Khayrandish.

Distribution: Very large distribution, west Palearctic, Morocco, and extended to Sakhalin Island.

Key to the known species of the family Sciomyzidae from Iran

(This key was originally developed by Rozkošný (1984) that modified based on Iranian species)

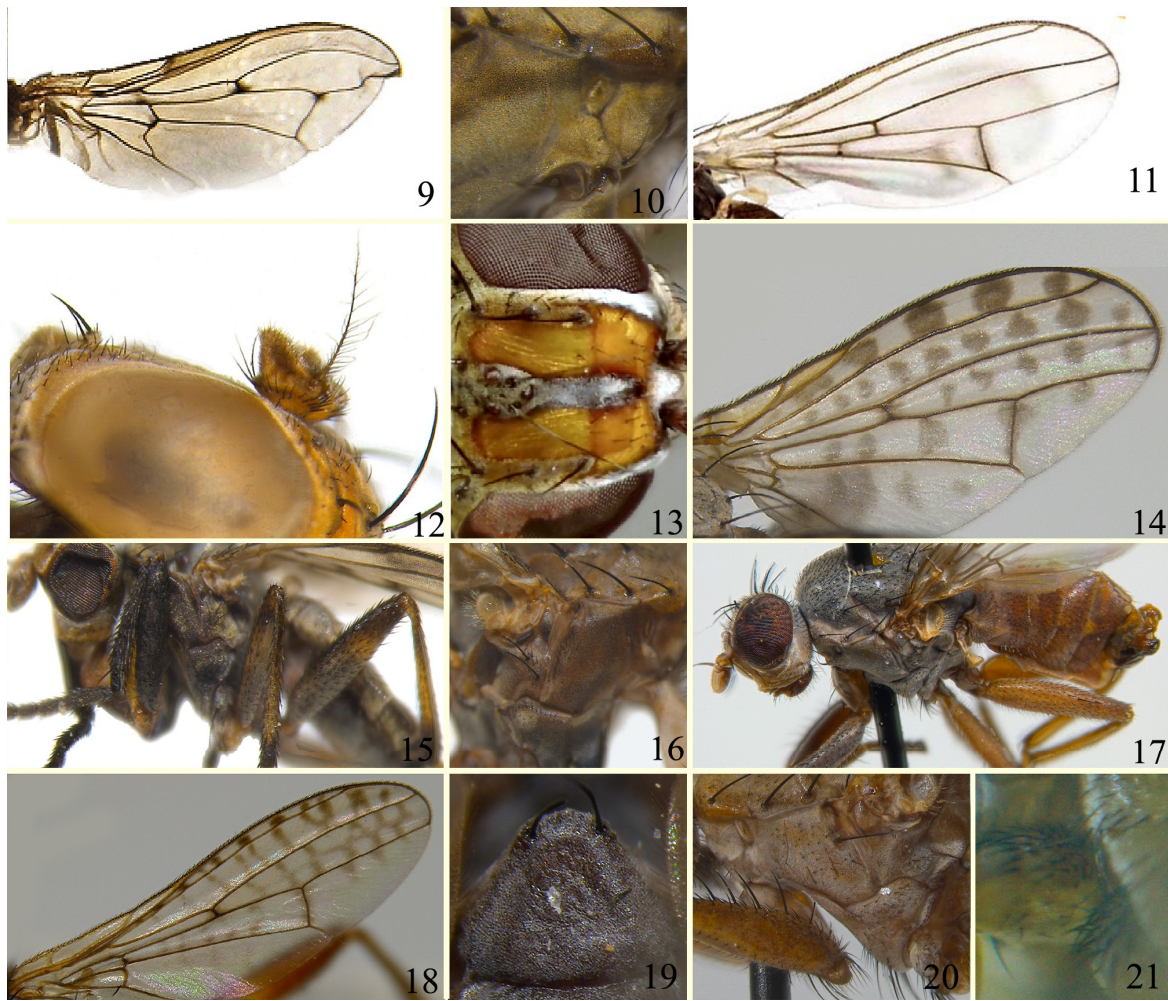
1. Vein R₄₊₅ and M strongly converging at apex of wing; anal cell with triangular extension at anal vein (Fig. 9).**Salticella fasciata** (Meigen, 1830)
 - Vein R₄₊₅ and M parallel or only slightly converging; anal cell without triangular extension at anal vein.**2**
2. Propleuron with distinct seta above base of fore coxa (Fig. 10), if propleuron short or indistinct, then anal vein not reaching posterior margin of wing (Fig. 11).**3**
 - Propleuron without seta above base of fore coxa, often with several hairs; anal vein reaching posterior margin of wing.**9**
3. Anal vein not reaching wing margin (Fig. 11); arista with several strong dorsobasal setulae in addition to arista hairs (Fig. 12), fore-coxa usually with 5 setae; subnotopleural strip reduced to a round black spot below anterior notopleural setae.**Colobaea punctata** (Lundbeck, 1923)



Figures 5–8. *Tetanocera ferruginea* Fallén, 1820 (male): **5.** Male habitus (lateral view); **6.** Antenna (lateral view); **7.** Epandrium and surstylus (lateral view); **8.** Surstylus (Caudal view).

- Anal vein reaching wing margin, at least as a fold; arista with normal hairs dorsobasally; fore-coxa with no more than 3 setae; blow anterior notopleural setae without black spot. **4**
4. One pair of fronto-orbital setae; inner posterior margin of hindcoxa with minute hairs.....
*Ditaeniella grisescens* (Meigen, 1830)

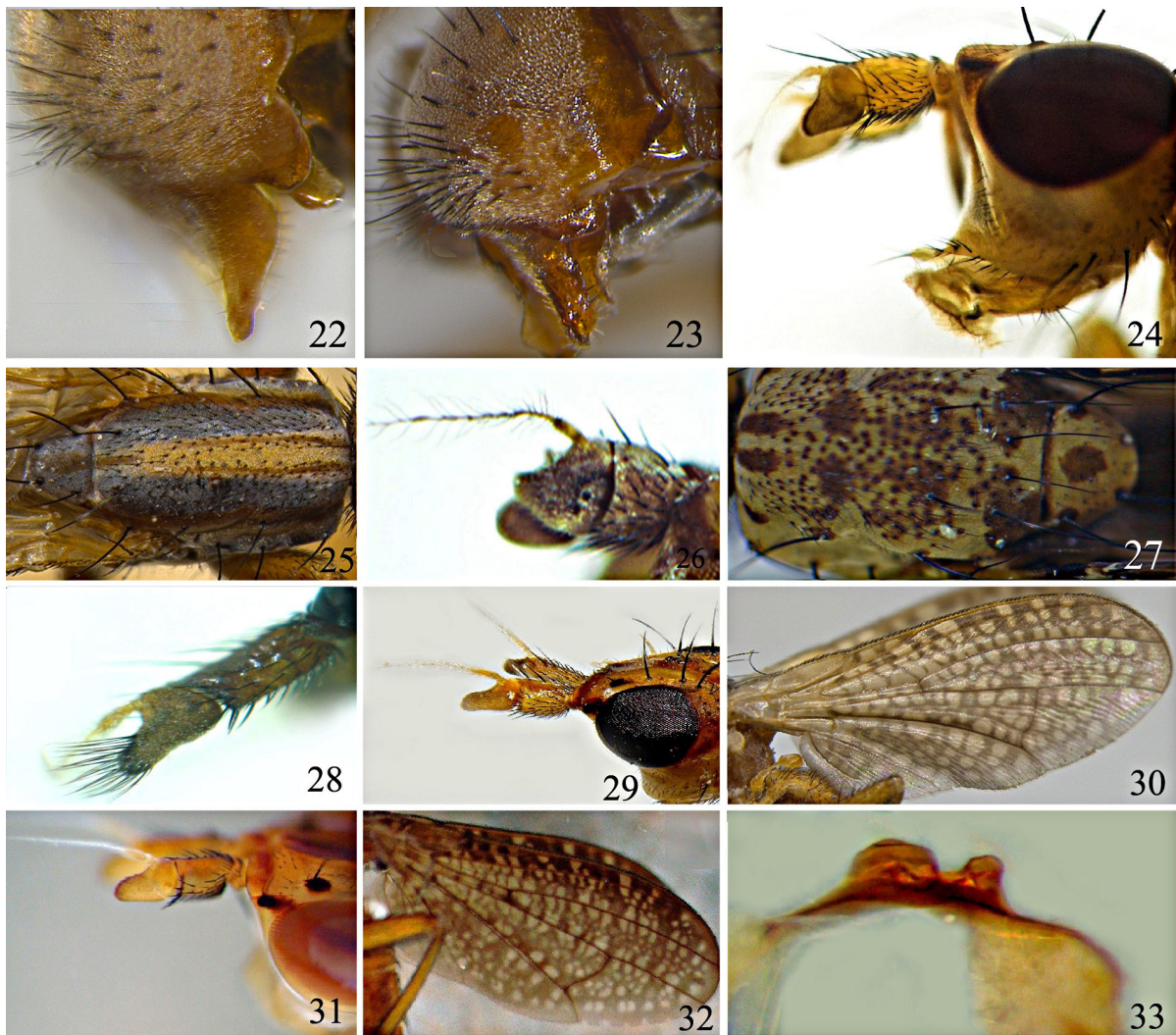
- Two pairs of fronto-orbital setae (Fig. 13); inner posterior margin of hind-coxa bare (*Pherbellia Robineau-Desvoidy, 1830*).**5**
5. Mid frontal strip extending two-thirds or more of distance from anterior ocellus to fore margin of frons.**6**
 - Mid frontal strip shorter extending no more than half distance from anterior ocellus to fore margin of frons.**7**



Figures 9–21. 9. Wing of *Salticella fasciata* (Meigen, 1830); 10. Propleuron in *Pherbellia cinerella* (Fallén, 1820) (lateral view); 11. Wing of *Colobaea punctata* (Lundbeck, 1923); 12. Antenna of *Colobaea bifasciella* (Fallen 1820) (lateral view); 13. Frons of *Pherbellia cinerella* (Fallén, 1820) (upper view); 14. Wing of *Pherbellia schoenherri* (Fallén, 1826); 15. Male habitus of *Pherbellia nana* (Fallen, 1820) (lateral view); 16. Mesopleuron of *Pherbellia griseola* (Fallen, 1820) (lateral view); 17. Male habitus of *Pherbellia ventralis* (Fallén, 1820) (lateral view); 18. Wing of *Dichetophora finlandica* Verbeke, 1964; 19. Scutellum of *Dichetophora finlandica* Verbeke, 1964 (dorsal view); 20. Mesopleuron of *Psacadina zernyi* Mayer, 1953 (lateral view); 21. Posterior margin of hind coxa of *Psacadina zernyi* Mayer, 1953.

6. Wing with pattern of blackish spots, costal marginal of wing with back spots (Fig. 14).
*Pherbellia schoenherri* (Fallén, 1826)
 - Wing without pattern of blackish spots, costal margin of wing darkened.
*Pherbellia cinerella* (Fallén, 1820)
 7. Mesopleuron with hairs along posterior margin (Fig. 16).
*Pherbellia griseola* (Fallen,1820)
 - Mesopleuron entirely bare.8

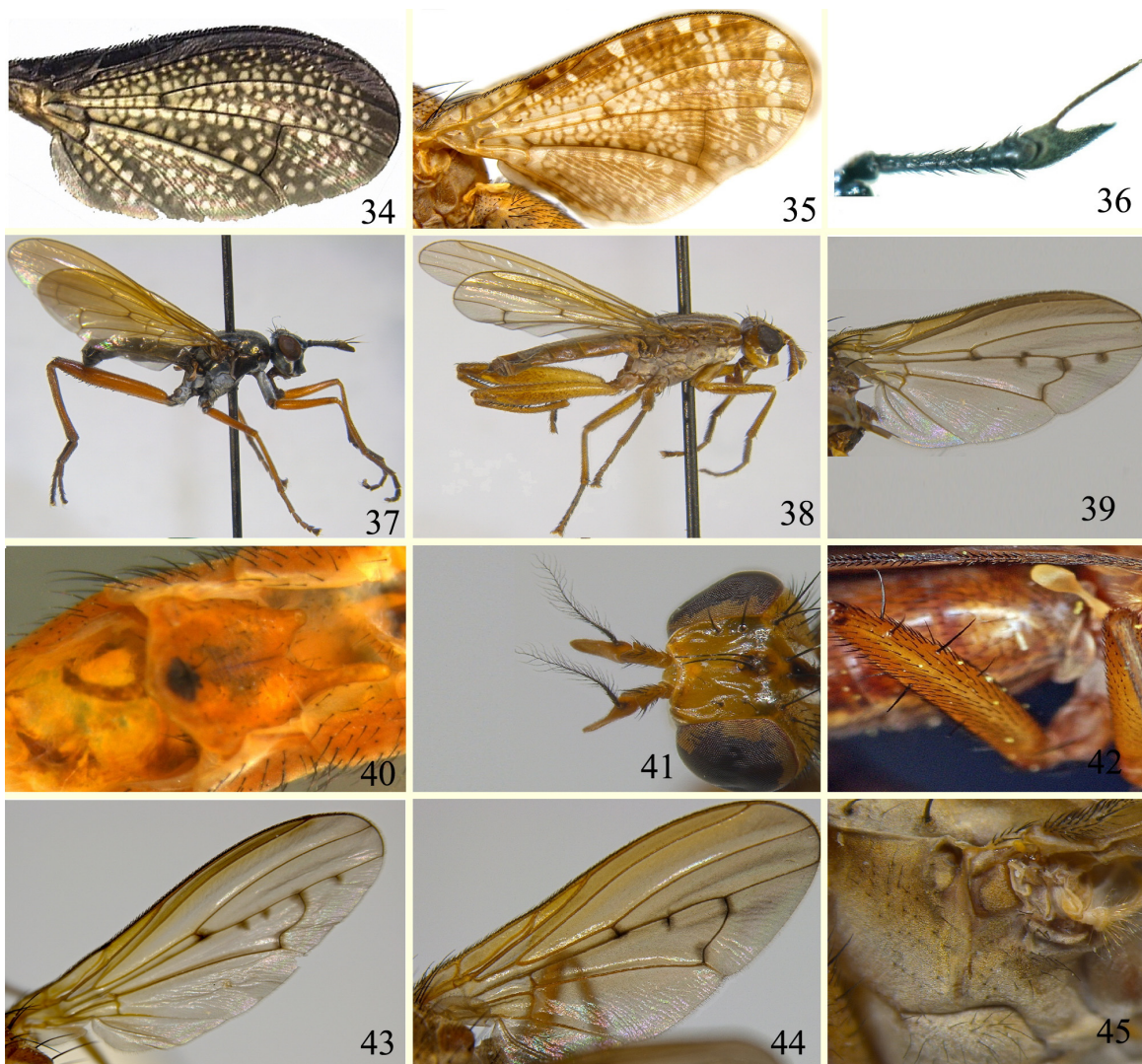
8. Middle and hind femora and tibia with brownish ring before tip (Fig. 15), abdomen brownish or grayish (Fig. 15).
*Pherbellia nana* (Fallén, 1820)
 - Middle and hind femora and tibia without brownish ring before tip; abdomen contrasting yellow (Fig. 17).
*Pherbellia ventralis* (Fallén, 1820)
 9. Wing with distinct reticulate pattern or with a pattern of blackish spots (Fig. 18). ..10



Figures 22–33. 22. Male gonostylus of *Psacadina zernyi* (Mayer, 1953) (lateral view); 23. Male gonostylus of *Psacadina verbekei* Rozkošný, 1975 (lateral view); 24. Head of *Limnia unguicornis* (Scopoli, 1763) (lateral view); 25. Mesonotum of *Limnia unguicornis* (Scopoli, 1763) (dorsal view); 26. Antenna of *Trypetoptera punctulata* (Scopoli, 1763) (lateral view); 27. Mesonotum of *Trypetoptera punctulata* (Scopoli, 1763) (dorsal view); 28. Antenna of *Coremacera marginata* (Fabricius, 1775) (lateral view); 29. Antenna of *Euthycera hrabei* Rozkošný, 1969 (lateral view); 30. Wing of *Euthycera hrabei* Rozkošný, 1969; 31. Antenna of *Euthycera stictica* (Fabricius, 1805) (lateral view); 32. Wing of *Euthycera stictica* (Fabricius, 1805); 33. Sternite 6 of *Euthycera stictica* (Fabricius, 1805).

- Wing without distinct reticulate pattern, at most with darkened costal margin and infuscated cross veins or with several isolated dark spots.20
 10. Scutellum with one pair setae (Fig. 19)...
*Dichetophora obliterata* Fabricius, 1805
 - Scutellum with 2 pairs of setae.11

11. Mesopleuron and pteropleuron haired sometimes with setae (Fig. 20); inner posterior margin of hind coxa haired (Fig. 21). 12
 -Mesopleuron and pteropleuron bare; inner posterior margin of hind coxa bare.16
 12. Subalar setae absent (Fig. 20) (*Psacadina Enderlein, 1939*).13



Figures 34-45: **34.** Wing of *Coremacera marginata* (Fabricius, 1775); **35.** Wing of *Coremacera amoena* (Loew, 1835); **36.** Antenna of *Sepedon spegea* (Fabricius, 1775); **37.** Male habitus of *Sepedon spegea* (Fabricius, 1775) (lateral view); **38.** Male habitus of *Sepedon spinipes* (Scopoli, 1763) (lateral view); **39.** Wing of *Hydromya dorsalis* (Fabricius, 1775); **40.** Sternite 4 in male of *Hydromya dorsalis* (Fabricius, 1775); **41.** Frons of *Tetanocera hyalipennis* (Roser, 1840); **42.** Hind femur of *Tetanocera arrogans* Meigen, 1830; **43.** Wing of *Ilione albiseta* (Scopoli, 1763); **44.** Wing of *Ilione turcestanica* (Hendel, 1903); **45.** Subalar seta in *Ilione turcestanica* (Hendel, 1903).

- Subalar setae present.14

13. Male gonostylus elongate, almost straight at lateral view; female usually with 1-2 ventral setae at middle of hind femora (Fig. 22).*Psacadina verbekei* Rozkošný, 1975

- Male gonostylus short and rounded, distinctly concave at lateral view (Fig. 23); female usually without ventral setae on hind femora.*Psacadina zernyi* Mayer, 1953

14. Mesopleuron and pteropleuron with setae in addition to hairs; prosternum bare. ...
.....*Pherbina coryleti* (Scopoli, 1763)

- Mesopleuron and pteropleuron with only hairs; prosternum haired or at least with one hair in each.15

15. Arista with short and whitish hairs (Fig. 24); mesonotum with longitudinal strip (Fig. 25).*Limnia unguicornis* (Scopoli, 1763)

- Arista with long black hairs (Fig. 26); mesonotum with rounded brown spots (Fig. 27). ...*Trypetoptera punctulata* (Scopoli, 1763)
16. Third antennal segment without tuft of long black hairs at tip (*Euthycera* Latreille, 1829).17
- Third antennal segment with tuft of long black hairs at tip (Fig. 28) (*Coremacera* Rondani, 1830).18
17. Scape and pedicel subequal (Fig. 29); costal margin of wing with 5-6 pale spots beyond apex of R₁ (Fig. 30); projection on male sternum 6 slender.
.....*Euthycera hrabei* Rozkošný, 1969
- Scape and pedicel unequal, scape distinctly longer (Fig. 31); costal margin of wing with 2-4 pale spots beyond apex of R₁ (Fig. 32); projection on male sternum 6 broad and flat (Fig. 33)...*Euthycera stictica* (Fabricius, 1805)
18. Face with a sharp black spot under antenna. ...*Coremacera catenata* (Loew, 1847)
- Face without spots under antenna.19
19. Front margin and apex of wings uniformly darkened, wings with reticulate whitish spots in a dark background (Fig. 34).
.....*Coremacera marginata* (Fabricius, 1775)
- Front margin of wings with brownish and whitish spots, wings with longitudinal reticulate brownish and whitish strips at anterior half (apex of wing brownish) and whitish reticulate pattern at posterior half of wings (Fig. 35).
.....*Coremacera amoena* (Loew, 1835)
20. Ocellar seta absent; scutellum with one pair of setae; second antennal segment rod-like (Fig. 36) (*Sepedon* Latreille, 1804).21
- Ocellar seta present; scutellum with two pairs of setae; second antennal segment stout and not rod-like.22
21. Body metallic blueish black; legs reddish yellow (Fig. 37).
.....*Sepedon sphegea* (Fabricius, 1775)
- Body yellowish brown; legs ochre yellow (Fig. 38).*Sepedon spinipes* (Scopoli, 1763)
22. Mesopleuron and pteropleuron bare; inner posterior margin of hind coxa without hairs.23
- Mesopleuron and pteropleuron haired; inner posterior margin of hind coxa with hairs.26
23. Wings with 5-7 dark spots, arista only pubescence (Fig. 39), sternum 4 in male with a pair of cylindrical process (Fig. 40).
.....*Hydromya dorsalis* (Fabricius, 1775)
- Wings without dark spots, only cross veins infuscate, arista moderately with long hairs, sternum 4 in male without process (*Tetanocera* Dumeril, 1800).24
24. Frons completely shining; mid-frontal strip indistinct (Fig. 41).
.....*Tetanocera hyalipennis* (Roser, 1840)
- Frons at least partly mat; mid-frontal strip usually distinct.25
25. Hind femur with a posterodorsal seta placed opposite or nearly opposite the apical anterodorsal seta (Fig. 42).
.....*Tetanocera arrogans* Meigen, 1830
- Hind femur without posterodorsal seta.
.....*Tetanocera ferruginea* Fallén 1820
26. Subalar seta absent; posterior cross-vein almost rectangularly curved in upper half (Fig. 1).*Elgiva cucularia* Linnaeus, 1767
- Subalar seta present (Fig. 45); posterior cross-vein bow shape in upper half (*Ilione* Haliday, 1830).27
27. Vein M₁₊₂ with small dark spot in posterior part near tip of wing (Fig. 43); hind femur in female without spines.
.....*Ilione albiseta* (Scopoli, 1763)
- Vein M₁₊₂ without small dark spot in posterior part near tip of wing (Fig. 44); hind femur in male and female with ventral spines.
.....*Ilione turcestanica* (Hendel, 1903)

Table 1. List of the known species of the family Sciomyzidae from Iran (1971-2016).

Species	Field inventory	Literature
<i>Colobaea punctata</i> (Lundbeck, 1923)	Khuzestan province	Knutson <i>et al.</i> (1973)
<i>Coremacera amoena</i> (Loew, 1835)	Khuzestan province	Knutson <i>et al.</i> (1973), Rozkošný & Elberg (1991)
<i>Coremacera catenata</i> (Loew 1847)	Alborz province East Azerbaijan province	Seddighi Sadr & Mohamadzade Namin (2016), Rozkošný & Elberg (1991), Mortelmans <i>et al.</i> (2016), Khaghaninia <i>et al.</i> (2016)
<i>Coremacera margina</i> (Fabricius, 1775)	Guilan province East Azerbaijan province	Seddighi Sadr & Mohamadzade Namin (2016), Rozkošný & Elberg (1991), Khaghaninia <i>et al.</i> (2016)
<i>Dichetophora obliterated</i> Fabricius, 1805	-	Rozkošný (1987)
<i>Ditaeniella grisescens</i> (Meigen, 1830)	Khuzestan province Alborz province	Knutson <i>et al.</i> (1973), Rozkošný & Elberg (1991), Mortelmans <i>et al.</i> (2016)
<i>Euthycera hrabei</i> Rozkošný, 1969	Alborz Province	Mohamadzade Namin <i>et al.</i> (2015)
<i>Euthycera stictica</i> (Fabricius 1805)	East Azerbaijan province	Hamed <i>et al.</i> (2016)
<i>Hydromya dorsalis</i> (Fabricius, 1775)	Kerman province, Khuzestan province, Mazandaran province, Alborz province East Azerbaijan province	Knutson <i>et al.</i> (1973), Rozkošný & Elberg (1991), Seddighi Sadr & Mohamadzade Namin (2016); Mortelmans <i>et al.</i> (2016), Khaghaninia <i>et al.</i> (2016)
<i>Iliane albisetia</i> (Scopoli, 1763)	Guilan province	Seddighi Sadr & Mohamadzade Namin (2016), Yano (1968), Rozkošný & Elberg (1991)
<i>Iliane turcestanica</i> (Hendel, 1903)	Khuzestan province East Azerbaijan province Alborz province	Knutson <i>et al.</i> (1973), Hamed <i>et al.</i> (2016), Mortelmans <i>et al.</i> (2016)
<i>Limnia unguicornis</i> (Scopoli, 1763)	East Azerbaijan province	Khaghaninia <i>et al.</i> (2016)
<i>Pherbellia cinerella</i> (Fallén, 1820)	Khuzestan province, Guilan province, Qazvin province, Alborz province	Knutson <i>et al.</i> (1973), Rozkošný & Elberg (1991), Seddighi Sadr & Mohamadzade Namin (2016), Khaghaninia <i>et al.</i> (2016), Mortelmans <i>et al.</i> (2016)
<i>Pherbellia griseola</i> (Fallen, 1820)	Khuzestan province Alborz province	Knutson <i>et al.</i> (1973), Rozkošný & Elberg (1991), Mortelmans <i>et al.</i> (2016)
<i>Pherbellia nana</i> (Fallén, 1820)	Alborz province	Mortelmans <i>et al.</i> , 2016
<i>Pherbina coryleti</i> (Scopoli, 1763)	Mazandaran province, Guilan province	Seddighi Sadr & Mohamadzade Namin (2016), Yano (1968), Rozkošný & Elberg (1991), Mortelmans <i>et al.</i> (2016)
<i>Pherbellia schoenherri</i> (Fallén, 1826)	Alborz province	Mortelmans <i>et al.</i> (2016)
<i>Pherbellia ventralis</i> (Fallén, 1820)	Mazandaran province	Mortelmans <i>et al.</i> (2016)
<i>Psacadina verbekei</i> Rozkošný, 1975	Alborz province	Rozkošný (1987), Rozkošný & Elberg (1991), Mortelmans (2016)
<i>Psacadina zernyi</i> (Mayer, 1953)	Guilan province	Ayatollahi (1971), Yano (1978), Rozkošný & Elberg (1991)
<i>Salticella fasciata</i> (Meigen, 1830)	Golestan province East Azerbaijan province	Rozkošný & Elberg (1991) Khaghaninia <i>et al.</i> (2016)
<i>Sepedon sphegea</i> (Fabricius, 1775)	Khuzestan province Mazandaran province Teheran province, Alborz province, Kerman province East Azerbaijan province	Knutson <i>et al.</i> (1973), Tirkari & Fathpoor (1974), Tirkari & Massoud (1978), Rozkošný & Elberg (1991), Motamedi <i>et al.</i> (2006), Mortelmans <i>et al.</i> (2016); Khaghaninia <i>et al.</i> (2016)
<i>Sepedon spinipes</i> (Scopoli, 1763)	Khuzestan province Kerman province Fars province East Azerbaijan province	Knutson <i>et al.</i> (1973), Motamedi <i>et al.</i> (2006), Rozkošný & Elberg (1991), Mortelmans <i>et al.</i> (2016), Khaghaninia <i>et al.</i> (2016)
<i>Tetanocera arrogans</i> Meigen, 1830	East Azerbaijan province	Hamed <i>et al.</i> (2016)
<i>Tetanocera hyalipennis</i> (Roser, 1840)	Guilan province Mazandaran province	Seddighi Sadr & Mohamadzade Namin (2016), Mortelmans <i>et al.</i> (2016)
<i>Trypetoptera punctulata</i> (Scopoli, 1763)	Guilan province East Azerbaijan province	Seddighi Sadr & Mohamadzade Namin (2016), Hamed <i>et al.</i> (2016); Rozkošný & Elberg (1991)

Discussion

Totally, 26 species of the family Sciomyzidae in this study and previous literatures are known from Iran (Table 1). Most of the genera of the family Sciomyzidae that are known to occur in Palearctic region have been found in Iran so far. However, some genera have been reported from adjacent countries including *Pelidnoptera* Rondani, 1856 (recorded from Azerbaijan and Armenia) and *Sciomyza* Fallen, 1820 (reported from Turkey), and are likely to occur in Iran too (Leclercq & Schacht, 1987; Rozkošný, 1984).

According to Table 1, some species including (*Hydromya dorsalis* (Fabricius, 1775), *Pherbellia cinerella* (Fallén, 1820), *Sepedon spegea* (Fabricius, 1775), *Sepedon spinipes* (Scopoli, 1763) and *Ilione turcestanica* (Hendel, 1903)) are more common in Iran and can be found in wider geographical area, so they have more potential to be used in biological control projects.

In the present study we compile an identification key for 28 Sciomyzidae known species from Iran. Nevertheless, as the fauna of Sciomyzidae is unknown in most parts of Iran, the real number may reach more than 50 species following special expeditions covering a wider geographical area of the country. So far, 176 species of the family Sciomyzidae are known from Palearctic region (Murphy *et al.*, 2012), thus it is necessary to continue investigations in order to know marsh flies fauna in Iran.

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Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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مطالعه تاکسونومی مگس‌های مرداب (Diptera: Sciomyzidae) در ایران

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چکیده: مطالعه فونستیک خانواده Sciomyzidae در شمال ایران انجام گرفت. نمونه‌ها با استفاده از تله مالیز طی سال‌های ۱۳۸۹-۱۳۹۰ از زیستگاه‌های مختلف در چندین منطقه از استان‌های گیلان و مازندران جمع‌آوری شدند. نه گونه شناسایی شد که در بین آن‌ها *Tetanocera ferruginea* و *Elgiva cucularia* Linnaeus, 1767 و Fallén 1820 برای فون ایران جدید هستند. کلید شناسایی برای ۲۸ گونه از خانواده Sciomyzidae که تاکنون از ایران شناخته شده‌اند، به همراه شکل‌هایی از خصوصیات مهم و ضروری ارائه شده است.

واژگان کلیدی: ایران، فون، شمال ایران، کلید، خانواده Sciomyzidae