



Taxonomic study of the subfamily Tachininae (Diptera: Tachinidae) in Northern Iran, with three genera and eleven new species records for the fauna of Iran

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ABSTRACT. This study forms a review of the subfamily Tachininae in the northern slopes of the Alborz Mountains and northwestern Iran from 2010 to 2014. A total of 23 genera and 37 species belonging to 11 tribes of the subfamily Tachininae are reviewed. Among them, three genera and 11 species are new records to the fauna of Iran. The collected data of all species, together with their current general distribution and reported hosts are presented. Identification keys to the 23 genera and 37 species found in the studied regions are also provided.

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Introduction

Tachininae is a large subfamily, with about 700 species recorded from the Palaearctic region (O'Hara et al., 2019). Members of this subfamily are morphologically very diverse and include some of the largest, most colorful, and most bristly tachinids. Tachininae differ from the three remaining subfamilies by the following morphological characters: arista usually bare, less often haired; prosternum usually bare; preapical anterodorsal seta of the fore tibia usually as strong as preapical dorsal seta; tergite 6 is

not interrupted mediodorsally in males, but more or less interrupted mediodorsally in females; distiphallus of males usually not sclerotized in lateroventral area; tergite 8 of females completely reduced, rarely its rudiments present, chorion of the eggs in dorsal and ventral surfaces thin (Tschorsnig & Herting, 1994). Females are ovularviparous and the eggs are deposited on their hosts, food plants and vicinities (Tschorsnig & Richter, 1998). Larvae of Lepidoptera and Coleoptera comprise the

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most numerous hosts of this subfamily, whereas other insect orders and a few other arthropods are attacked by some species of the Tachininae (Stireman et al., 2006).

Some important taxonomic studies on this subfamily are as follows: Herting & Dely-Draskovits (1993) provided the catalogue of the family Tachinidae in Palaearctic area. Tschorsnig & Herting (1994) compiled information on Central European species of tachinids and provided the identification keys for species and data on their distribution and ecology. Ziegler & Shima (1996) studied the tachinid flies of the Ussuri area. Tschorsnig & Richter (1998) prepared a genera key for the family Tachinidae in contributions to a Manual of Palaearctic Diptera. Kara & Tschorsnig (2003) published the host catalogue for the Turkish Tachinidae. O'Hara et al. (2009) provided the annotated catalogue of the Tachinidae of China. Tschorsnig (2017) published the preliminary host catalogue of Palaearctic Tachinidae. O'Hara et al. (2019) prepared the preliminary checklist of the Tachinidae of the world.

The studies on Tachinidae fauna of Iran are limited to some parts of the country, which most important are: Samet et al. (1977), Gheibi et al. (2010), Sakenin et al. (2010), Gilasian et al. (2016, 2018) and Seyyedi-Sahebari et al. (2013, 2018). During these studies, 45 species belonging to the subfamily Tachininae, were recorded totally.

This study aims to review of the subfamily Tachininae in Northern and Northwestern Iran and to add further information about their distributions in Iran.

Material and methods

Studied specimens were collected by standard entomological sweeping net and Malaise traps from West Azerbaijan, East Azerbaijan, Gilan and Mazandaran provinces during 2010–2014. These specimens were deposited at the Insect

collection of Professor H. Maleki-Milani, Tabriz, Iran (ICHMM) and Insect collection of Tarbiat Modarres University. Photographs were taken using a Nikon SMZ 1000 stereomicroscope equipped with Nikon D5200 digital camera. The specimens were identified using keys of Tschorsnig & Richter (1998) for genus level and Mesnil (1944–1975) for genus and species level. Parts of the keys of Zimin et al. (1989) and Tschorsnig & Herting (1994) have been also used as further references. O'Hara et al. (2019) were used for species distribution. The tachinid specialists Joachim Ziegler and Theo Zeegers (see chapter Acknowledgement below) confirmed the identifications of the authors.

Results

At the present study, 23 genera and 37 species belonging to 11 tribes of the subfamily Tachininae were reviewed in Northern and Northwestern Iran. Three genera and 11 species are new records to the Iranian fauna, which are marked by an asterisk. Identification keys to all genera and species found in the studied regions are provided.

Identification key for the genera of Tachininae collected in northern Iran

- 1. Arista short pubescent or plumose... 2
- Arista apparently bare.....6
- 2. Dorsal surface of lower calypter with long hairs..... *Nemoraea Robineau-Desvoidy*
- Dorsal surface of lower calypter bare.....3
- 3. Scutum before sature with one pair of broad dark longitudinal stripes..... *Mintho Robineau-Desvoidy*
- Scutum before sature with three, four or five narrower dark longitudinal stripes....4
- 4. Inner anterior surface of fore coxa covered with appressed seta..... *Microphthalma Macquart*

- Inner anterior surface of fore coxa bare or predominantly bare.....5
 5. Eye densely covered with hairs.....
 *Macqartia Robineau-Desvoidy*
 -. Eye bare..... *Bithia Robineau-Desvoidy*
 6. M not reaching wing margin, ending about where bend should be.....
 *Actia Robineau-Desvoidy*
 -. M with distinct bend, reaching wing margin.....7
 7. Body metallic green, facial ridge with setae on lower 1/5 or less.....
 *Gymnocheta Robineau-Desvoidy*
 -. Thorax and abdomen not metallic, but if so, then either facial ridge with strong setae at least on lower 2/3.....8
 8. Hind coxa with one or more setae on posterodorsal margin.....9
 -. Hind coxa bare on posterodorsal margin.....11
 9. Parafacial with hairs over its whole length, ocellar setae absent.....
 *Peleteria Robineau-Desvoidy*
 -. Parafacial with hairs or setulae only, ocellar setae well-developed.....10
 10. Legs predominantly yellow.....
 *Tachina Meigen*
 -. Legs all black..... *Nowickia Wachtl*
 11. Middorsal depression on abdominal syntergite 1+2 not extending back to hind margin of that segment.....12
 -. Middorsal depression on abdominal syntergite 1+2 extending back to hind margin of that segment.....18
 12. All of the following characteristics present simultaneously: R₄₊₅ setose at least halfway to cross-vein R-m; hind tibia with three dorsal preapical setae; second costal section with fine hairs ventrally; subapical scutellar setae convergent or crossing apically, apical setae fine or hair-like; parafacial without strong setae.....13
 -. Without such combination of characteristics present simultaneously....14

13. Lower proepimeral setae directed anteroventrally.....
 *Peribaea Robineau-Desvoidy*
 -. Proepimeral setae not as above.....
 *Siphona Meigen*
 14. Eye covered with hairs, each hair longer than combined diameter of three eye facets.....15
 -. Eye bare or apparently bare.....16
 15. Postpronotum with the 3 strongest setae forming a nearly right-angled triangle...
 *Zophomyia Macquart*
 -. Setae on postpronotum not as above, middle setae at most slightly displaced anteriorly..... *Loewia Egger*
 16. Prosternum setose.....
 *Graphogaster Rondani*
 -. Prosternum bare.....17
 17. Parafacial with setae over most of its length.....
 *Brachymera Brauer et Bergenstamm*
 -. Parafacial bare..... *Bracteola Richter*
 18. Prosternum setose
 *Lydina Robineau-Desvoidy*
 -. Prosternum bare.....19
 19. Preapical posteroventral seta on hind tibia distinctly shorter than preapical anteroventral seta.....
 *Aphria Robineau-Desvoidy*
 -. Preapical posteroventral seta on hind tibia nearly as long as preapical anteroventral seta..... 20
 20. First and second aristomere each at least three times as long as its diameter...
 *Triarthria Stephens*
 -. First aristomere at most two times as long as its diameter.....21
 21. Second aristomere strongly elongate, 6-14 times as long as its diameter.....
 *Germaria (Fallén)*
 -. Second aristomere distinctly shorter....22
 22. Postpronotum with 3 basal setae in a straight line, a strong anterior seate placed

before middle basal setae.....
 *Linnaemya Robineau-Desvoidy*
 -. Postpronotum not as above.....
 *Ernestia Robineau-Desvoidy*

TRIBE: TACHININI**Genus: *Tachina* Meigen, 1803****Identification key for species of the genus *Tachina* collected in northern Iran**

1. Tergite 2 ventrally with fair hairs; first segment of arista usually as long as the 2nd (or at least half as long).....
 *T. praeceps* (Meigen)
 -. Tergite 2 ventrally with black hairs; first segment of arista as long as 1/5-1/3 (seldom half as long) of the 2nd.....**2**
2. Tergite 2 with 4-6, tergite 3 with 4-8 median marginal setae.....
 *T. magna* (Giglio-Tos)
 -. Tergites 2-3 usually with 2 median marginal setae.....**3**
3. Frons in males 0.68-1.08 times and in females 0.94-1.28 times as wide as one eye; fore tarsus yellow, seldom brown..... *T. fera* (Linnaeus)
 -. Frons in males 1.10-1.39 times and in females 1.27-1.55 times as wide as one eye; fore tarsus brown or black.....**4**
4. The black longitudinal abdominal stripe widens towards the end on tergite 5, seldom ending in a point. Males: anterior claws longer than the last tarsal segment. Females: 4th segment of the fore tarsus clearly wider than long.....
 *T. magnicornis* (Zetterstedt)
 -. The black longitudinal abdominal stripe ends in a tip on tergite 5. Males: anterior claws at most as long as the last tarsal segment. Females: 4th segment of the fore tarsus at most as wide as long.....
 *T. nupta* (Rondani)

Tachina fera* (*Eudoromyia*) (Linnaeus, 1761)*Material examined:** 1♂, 13.V.2010, 1♂, 3.VI.2010, 2♂♂ 1♀, 20.VI.2010, Gilan,

Roodsar, Orkom, 36°45'44.34" N, 50°18'11.88" E, 1201m a.s.l. 1♂, 10.IX.2010, Gilan, Roodsar, Ghazichak, 36°45'52.62" N, 50°20'1.08" E, 1787m a.s.l., Malaise trap, leg. M. Kheirandish; 5♂♂, 26.VIII.2011, Mazandaran, Ghaznasara, 36°16'58.08" N, 52°10'55.62" E, 2013m a.s.l., 2♂♂, 26.VIII.2011, Mazandaran, Ghaznasara, 36°16'56.82" N, 52°10'58.50" E, 2032m a.s.l., 3♀♀, 25.X.2011, Mazandaran, Tanghevez, 36°21'55.68" N, 52°6'10.32" E, 702m a.s.l., Malaise trap, leg. A. Nadimi.

Distribution: Palaearctic: Widely distributed in Europe and Scandinavia countries, Russia (Eastern Siberia, Southern Far East, Western Russia), Central Asia, Middle East (Palestine), China, Japan, South Korea, Mongolia, Turkey, Transcaucasia (Armenia), North Africa (Algeria). Iran (Samet et al., 1977).

Host range: Lepidoptera: Arctiidae: *Eilema* sp. and *Lithosia quadra* (Linnaeus, 1758); Lasiocampidae: *Dendrolimus pini* (Linnaeus, 1758); Pieridae: *Pieris rapae* (Linnaeus, 1758) and many genera and species of Noctuidae, Lymantriidae (see Tschorsnig, 2017: 242-244).

Tachina* (*Tachina*) *magna* (Giglio-Tos, 1890)*Material examined:** 1♂, 14.VII.2010, East Azerbaijan Province, Aynalu, 38°57'11.64" N, 46°43'27.36" E, 782m a.s.l., leg. S. Khaghaninia.

Distribution: Palaearctic: From France in West Europe, Romania, Ukraine in East Europe, also from Albania, Bulgaria, Greece, Italy, Spain in South Europe, Russia (Eastern Siberia, Southern Far East, Western Russia, Western Siberia), Kazakhstan, Mongolia, Transcaucasia. Iran (Seyyedi-Sahebari et al., 2013).

Host range: Lepidoptera: Lymantriidae: *Dasychira albodentata* Bremer, 1864 and *Lymantria dispar* (Linnaeus, 1758); Notodontidae: *Phalera bucephala* (Linnaeus, 1758) (see Tschorsnig, 2017: 245).

***Tachina (Eudoromyia) magnicornis* (Zetterstedt, 1844)**

Material examined: 3♂♂, 4♀♀, 14.VII.2010, East Azerbaijan, Arasbaran, Aynalu, 38°57'11.64" N, 46°43'27.36" E, 782 m a.s.l., 3♂♂, 14.VI.2010, East Azerbaijan, Arasbaran, 38°55'43.5" N, 46°47'35.34" E, 1358m a.s.l., 3♂♂, 14.VI.2010, East Azerbaijan, Arasbaran, Chichakli, 38°30'20.4" N, 46°37'14.04" E, 1689m a.s.l., 2♂♂, 3♀♀, 7.VII.2010, East Azerbaijan, Arasbaran, Chichakli, 38°31'.22.02" N, 46°32'6.66" E, 1733m a.s.l., 2♂♂, 2♀♀, 3.VII.2011; East Azerbaijan, Jolfa, Livarjan, 38°49'2" N, 45°42'15.3" E, 1158m a.s.l., 3♂♂, 2♀♀, 12.V.2013, East Azerbaijan, Arasbaran, Khumarlu, 38°59'16.08" N, 46°54'0.24" E, 1027m a.s.l., 3♂♂, 8♀♀, 25.V.2013, East Azerbaijan, Maraghe, Kurde Deh, 37°25'18.9" N, 46°25'5.82" E, 1787m a.s.l., sweep net, leg. S. Khaghaninia; 1♂, 25.VIII.2009, West Azerbaijan, Khoy, Galavans, 38°41'24" N, 44°39'00" E, 2044m a.s.l., Malaise trap, leg. A. Pourhaji; 1♂, 27.VI.2010, Gilan, Roodsar, Ziaz, 36°52'27.18" N, 50°13'24.78" E, 490m a.s.l., 1♂, 4.VI.2010, 1♂, 20.VI.2010, 1♀, 14.VIII.2010, Gilan, Roodsar, Ghazichak, 36°45'57.54" N, 50°19'35.22" E, 1803m a.s.l., 5♀, 20.VI.2010, 2♂, 3♀, 11.VII.2010, Gilan, Roodsar, Ghazichak, 36°45'52.62" N, 50°20'1.08" E, 1787m a.s.l., leg. M. Kheirandish; 1♀, 4.VI.2011, 1♂, 1♀, 4.VII.2011, 3♂, 27.X.2011, Mazandaran, Ghaznasara, 36°16'56.82" N, 52°10'58.50" E, 2032m a.s.l., Malaise trap, 1♀, 4.VII.2011, 2♂, 4.VIII.2011, Mazandaran, Ghaznasara, 36°16'58.08" N, 52°10'55.62" E, 2013m a.s.l., 1♀, 4.VIII.2011, Mazandaran, Tanghevaz, 36°18'51.42" N, 52°7'48" E, 703m a.s.l., Malaise trap, leg. A. Nadimi.

Distribution: Palaearctic: Widely distributed in East Europe and South Europe, Russia (Eastern Siberia, Southern Far East, Western Russia, Western Siberia), Transcaucasia (Azerbaijan), Turkey,

Middle East (Palestine), China and Mongolia. Iran (Samet et al., 1977).

Host range: Lepidoptera: Many genera and species of Lasiocampidae, Lymantriidae, Noctuidae and Pyralidae (see Tschorsnig, 2017: 245–246).

***Tachina (Eudoromyia) nupta* (Rondani, 1859)**

Material examined: 1♂, 26.VI.2011, Mazandaran, Ghaznasara, 36°16'58.08" N, 52°10'55.62" E, 2013m a.s.l., Malaise trap, leg. A. Nadimi.

Distribution: Palaearctic: Widely distributed in Europe, Russia (Eastern Siberia, Southern Far East, Western Russia), Central Asia (Turkmenistan, Uzbekistan), Transcaucasia (Azerbaijan), Japan, South Korea, Mongolia, China (Central, Northeast). Oriental: China (East). Iran (Parchami-Araghi, 1994).

Host range: Lepidoptera: Noctuidae: *Mythimna (Acantholeucania) loreyi* (Duponchel, 1827) (Parchami-Araghi, 1994).

***Tachina (Echinogaster) praeceps* (Meigen, 1824)**

Material examined: 1♀, 11.VI.2011, East Azerbaijan, Arasbaran, Oskulu, 38°51'30.90" N, 46°52'24" E, 1721m a.s.l., sweep net, leg. F. Seyyedi-Sahebari.

Distribution: Palaearctic: Widely distributed in Europe, Russia (Southern Far East, Western Russia), Transcaucasia, Central Asia (Kyrgyzstan, Turkmenistan, Uzbekistan), Kazakhstan, Middle East (Palestine), China, Mongolia, North Africa. Iran (Samet et al., 1977).

Host range: Lepidoptera: Many genera and species of Arctiidae, Lasiocampidae, Lymantriidae, Noctuidae, Nymphalidae, Pieridae and Sphingidae (see Tschorsnig, 2017: 246–247).

Genus: *Nowickia* Wachtl, 1894

Identification key for species of the genus *Nowickia* collected in northern Iran

1. End section of Cu₁ vein as long as 2/3 of dm-cu..... *N. danileveskyi* (Portschinsky)

-. End section of Cu₁ vein as long as dm-cu2

2. Basal half of the palpus brown or blackish, the thickened distal half in contrast yellow. Male: tergite 5 ventrally at each side with a scarcely dense setae group which does not form a brush.....

..... *N. ferox* (Panzer)

-. Palpus uniformly colored brown to black. Male: the numerous straight setae on the ventral side of tergite 5 form a distinct brush.....

..... *N. atripalpis* (Robineau-Desvoidy)

Nowickia (*Fabriciella*) *atripalpis*
(Robineau-Desvoidy, 1863)

Material examined: 1♂, 3.VII.2011, East Azerbaijan, Arasbaran, Chichakli, 38°41'2.84" N, 46°31'50.4" E, 1788m a.s.l., sweep net, leg. F. Seyyedi-Sahebari.

Distribution: Palaearctic: Widely distributed in Europe, Russia (Eastern Siberia, Southern Far East, Western Russia, Western Siberia), Transcaucasia, Central Asia (Kyrgyzstan, Tajikistan, Uzbekistan), China, Mongolia. Iran (Seyyedi-Sahebari et al., 2013).

Host range: Lepidoptera: Lasiocampidae: *Malacosoma castrensis* (Linnaeus, 1758) (see Tschorsnig, 2017: 248).

Nowickia danileveskyi (Portschinsky, 1882)

Material examined: 1♀, 4.VI.2011, Mazandaran, Joorband, 36°26'17.28" N, 52°7'13.62" E, 272m a.s.l., Malaise trap, leg. A. Nadimi; 1♀, 3.VII.2011, East Azerbaijan, Arasbaran, Chichakli, 38°41'2.84" N, 46°31'50.4" E, 1788m a.s.l., sweep net, leg. F. Seyyedi-Sahebari.

Distribution: Palaearctic: From France in West Europe, Ukraine in East Europe, Bulgaria, Croatia, Greece, Macedonia, Montenegro, Serbia in South Europe, Central Asia (Turkmenistan), Russia (Western Russia), Transcaucasia, Kazakhstan and China. Iran (Gheibi et al., 2010).

Host range: Unknown

Nowickia (*Fabriciella*) *ferox* (Panzer, 1809)

Material examined: 1♂, 4.VII.2011, 1♀, 4.VIII.2011, Mazandaran, Ghaznasara, 36°16'58.08" N, 52°10'55.62" E, 2013m a.s.l., Malaise trap, leg. A. Nadimi; 1♀, 3.VIII.2013, East Azerbaijan, Arasbaran, Chichakli, 38°41'2.84" N, 46°31'50.4" E, 1788m a.s.l., sweep net, leg. S. Khaghaninia.

Distribution: Palaearctic: Widely distributed in Europe, Russia (Eastern Siberia, Western Russia), Transcaucasia. Iran (Seyyedi-Sahebari et al., 2013).

Host range: Lepidoptera: Lasiocampidae: *Dendrolimus pini* (Linnaeus, 1758), Noctuidae: *Apamea monoglypha* (Hufnagel, 1766) and *Xylena exsoleta* (Linnaeus, 1758) (see Tschorsnig, 2017: 248).

Genus: *Peleteria* Robineau-Desvoidy, 1830

Peleteria meridionalis (Robineau-Desvoidy, 1830)

Material examined: 1♂, 12.V.2013, East Azerbaijan, Jolfa, Livarjan, 38°49'24.06" N, 45°42'15.3" E, 1158m a.s.l., sweep net, leg. S. Khaghaninia.

Distribution: Palaearctic: From France in West Europe, Romania, Ukraine in East Europe also Italy, Portugal, Spain in South Europe, Central Asia (Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan), Russia (Western Russia), Transcaucasia, Middle East (Palestine), North Africa (Algeria, Egypt). Iran (Seyyedi-Sahebari et al., 2013).

Host range: Unknown

Genus: *Germaria* (Fallén, 1820)

Germaria graeca (Brauer & Bergenstamm, 1889)

Material examined: 1♂, 3.V.2011, Mazandaran, Ghaznasara, 36°16'58.08" N, 52°10'55.62" E, 2013m a.s.l., Malaise trap, leg. A. Nadimi.

Distribution: Palaearctic: From Greece in the South Europe, Turkey, Transcaucasia (Azerbaijan). Iran (Ziegler, 2010).

Host range: Lepidoptera: Pyralidae: *Bradyrrhoa gilveolella* (Treitschke, 1833) (see Tschorsnig, 2017: 250).

TRIBE: NEMORAEINI

Genus: *Nemoraea* Robineau-Desvoidy, 1830*

Nemoraea pellucida (Meigen, 1824)*

(Fig. 1a-b)

Material examined: 1♀, 10.VI.2010, Gilan, Roodsar, Ziaz, 36°52'27.18" N, 50°13'24.78" E, 490m a.s.l., 1♂, 14.IX.2010, Gilan, Roodsar, Ghazichak, 36°45'57.54" N, 50°19'35.22" E, 1803m a.s.l., leg. M. Kheirandish; 1♂, 26.VIII.2011, Mazandaran, Tanghevaz,

36°21'55.02" N, 52°6'10.74" E, 692m a.s.l., Malaise trap, leg. A. Nadimi.

Diagnostic characters: Eye covered with dense hairs; antenna and palpus yellow; dorsal surface of lower calypter with long hairs; scutellum brownish yellow; abdomen in male for most part yellowish red (Fig. 1a) and in female bluish black with slight greyish pruinescence (Fig. 1b); tergites without median discal setae.

Distribution: Palaearctic: Widely distributed in Europe and Scandinavia countries, Russia (Eastern Siberia, Southern Far East, Western Russia and Western Siberia), Turkey, Transcaucasia, Japan, South Korea, North Africa (Algeria); Oriental: China (East). **New record for Iran.**

Host range: Lepidoptera: Sphingidae: *Hyles vespertilio* (Esper, 1780) and *Sphinx pinastri* Linnaeus, 1758; Lymantriidae: *Orgyia recens* (Hübner, 1819); Pyralidae: *Galleria mellonella* (Linnaeus, 1758) and many genera and species of Noctuidae, Arctiidae, Geometridae, Notodontidae (see Tschorsnig, 2017: 250-252).

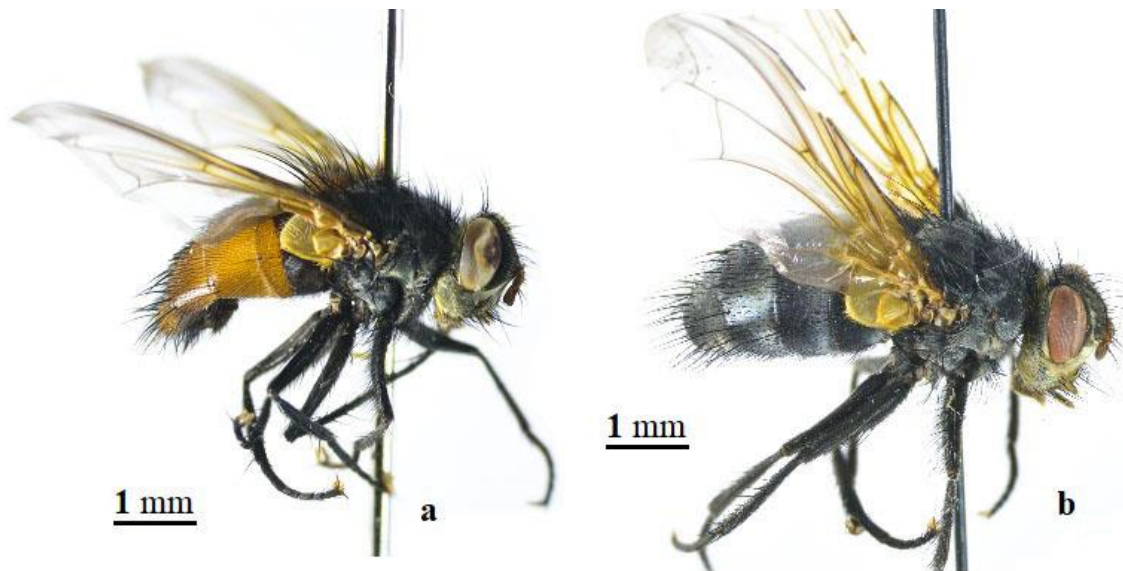


Figure 1. *Nemoraea pellucida* (Meigen, 1824); **a.** male, general habitus, lateral view, **b.** female, general habitus, lateral view.

TRIBE: LINNAEMYIINI

Genus: *Linnaemya* Robineau-Desvoidy, 1830

Identification key for species of the genus *Linnaemya* collected in northern Iran

1. Upper part of head without black setulae behind the postocular row; m-cu curved...
.....*L. neavei* Curran
- . Upper part of head with one complete row of black setulae behind the postocular row; m-cu straight.....2
2. R₄₊₅ with setae extending at least to half distance between the base and cross-vein r-m.....*L. frater* (Rondani)
- . R₄₊₅ with 4-5 setae at the base.....
..... *L. soror* Zimin (Fig. 2)

***Linnaemya (Homoeonychia) frater* (Rondani, 1859)**

Material examined: 1♀, 20.VI.2010, Gilan, Roodsar, Orkom, 36°45'44.34" N, 50°18'11.88" E, 1201m a.s.l., Malaise trap, leg. M. Kheirandish; 1♀, 29.VI.2013, West Azerbaijan, Khoy, Safaiyeh, 38°48'12" N, 44°35'25" E, 1796m a.s.l., Malaise trap, leg. A. Pourhaji.

Distribution: Palaearctic: Widely distributed in Europe except of the north countries, also known from Middle East (Palestine), Russia (Western Russia, Western Siberia), Transcaucasia. Iran (Seyyedi-Sahebari et al., 2018).

Host range: Lepidoptera: Arctiidae: *Amata phegea* (Linnaeus) (see Tschorsnig, 2017: 252).

***Linnaemya (Linnaemya) neavei* Curran, 1934**

Material examined: 1♀, 13.VII.2010, East Azerbaijan, Arasbaran, Makidi valley, 38°50'51.84" N, 46°54'54.06" E, 1426 m a.s.l., sweep net, leg. F. Seyyedi-Sahebari.

Distribution: Palaearctic: South Europe (Greece, Turkey), Middle East (Palestine, Jordan). Iran (Gheibi et al., 2010).

Host range: Lepidoptera: Noctuidae: *Leucania loreyi* (Duponchel, 1827), *Mythimna unipuncta* (Haworth, 1809) and *Agrotis* sp. (see Tschorsnig, 2017: 253).

***Linnaemya (Linnaemya) soror* Zimin, 1954* (Fig. 2a-b)**

Material examined: 1♀, 3.VI.2011, Mazandaran, Joorband, 36°26'17.28" N, 52°7'13.62" E, 272m a.s.l., Malaise trap, leg. A. Nadimi.

Diagnostic characters: Arista bare; scutellum yellow, with crossed apical setae; 2th section of costal vein about half of 3th; R₄₊₅ setose to crossvein r-m; legs yellow (Fig. 2a); abdomen yellow with black stripe in the middle of tergites, uniformly covered with grey pruinescence (Fig. 2b).

Distribution: Palaearctic: From France in the West Europe, Croatia, Greece, Italy, Malta, Portugal, Spain in the South Europe, Central Asia (Tajikistan, Turkmenistan, Uzbekistan), Middle East (Palestine), Russia (Eastern Siberia, Southern Far East, Western Siberia), Transcaucasia, North Africa (Canary Islands, Egypt); Oriental: China (East), India, Nepal. **New record for Iran.**

Host range: Unknown.

Genus: *Lydina* Robineau-Desvoidy, 1830

***Lydina aenea* (Meigen, 1824)**

Material examined: 1♂, 4♀♀, 25.VI.2014, West Azerbaijan, Khoy, Pere, 38°44'19.20" N, 44°52'59.82" E, 1405m a.s.l., sweep net, leg. S. Khaghaninia.

Distribution: Palaearctic: Widely distributed in Europe, Mongolia, China, Russia (Eastern Siberia, Southern Far East, Western Russia, Western Siberia), Transcaucasia (Armenia). Iran (Seyyedi-Sahebari et al., 2018).

Host range: Lepidoptera: Geometridae: *Eupithecia* sp.; Tortricidae: *Zeiraphera griseana* (Hübner, 1799) (see Tschorsnig, 2017: 255).

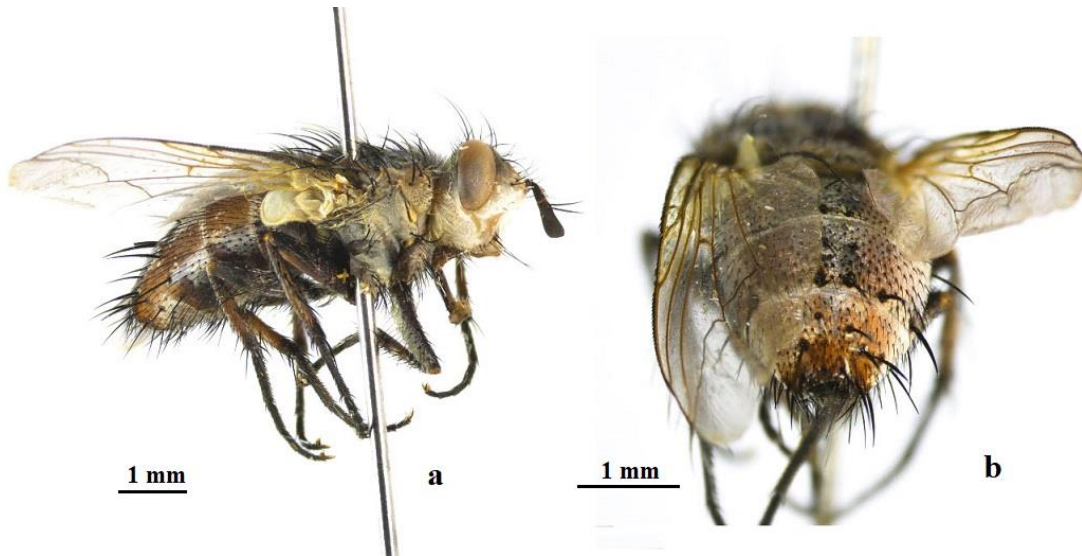


Figure 2. *Linnaemya (Linnaemya) soror* Zimin, 1954 (female); **a.** general habitus, lateral view, **b.** abdomen, dorsal view.

TRIBE: ERNESTIINI

Genus: *Bracteola* Richter, 1972*

Bracteola anthracina* Richter, 1972

(Fig. 3a-b)

Material examined: 5♂♂, 27.V.2010, 2♂♂, 1♀, 4.VI.2010, Gilan, Roodsar, Orkom, 36°45'44.34" N, 50°18'11.88" E, 1201m a.s.l., Malaise trap, leg. M. Kheirandish.

Diagnostic characters: Antenna black, longer than height of gena, postpedicel rounded at the tip (Fig. 3b); eye densely covered with hairs; prosternum and proepisternum bare, wing cell r_{4+5} with a petiole at least as long as 2/3 section of M beyond bend; R_{4+5} setose at least halfway to crossvein r-m; body shiny black (Fig. 3a).

Distribution: Palaearctic: Central Asia (Turkmenistan), Russia (Western Russia), Transcaucasia (Azerbaijan). **New record for Iran.**

Host range: Unknown.

Genus: *Ernestia* Robineau-Desvoidy, 1830*

Ernestia argentifera* (Meigen, 1824)

(Fig. 4a-b)

Material examined: 1♂, 26.VII.2014, West Azerbaijan, Uremia, Marmisho, 37°35'2.70"

N, 44°38'7.80" E, 1353m a.s.l., sweep net, leg. S. Khaghaninia; 1♂, 26.VI.2014, West Azerbaijan, Khoy, Galavans, 38°41'24" N, 44°39'00" E, 2044m a.s.l., Malaise trap, leg. A. Pourhaji.

Diagnostic characters: Eye densely covered with hairs; back of head behind the postocular row with only fair hairs (Fig. 4 a); parafacial, pleura, femora as well as tergite 5 with black hairs (Fig. 4b); apical 2/3 of scutellum yellow, without crossed apical setae; tergites covered with greyish pruinescence almost to the end, with very variable iridescent spots.

Distribution: Europe: Palaearctic: From Austria, France and Germany in the West Europe to Czech Republic, Hungary, Slovakia and Ukraine in the East Europe, also known from Greece, Italy and Spain in the South Europe, Russia (Central Russia). **New record for Iran.**

Host range: Lepidoptera: Noctuidae: *Mesogona acetosellae* (Denis & Schiffermüller, 1775), *Orthosia cruda* (Denis & Schiffermüller, 1775), *O. miniosa* (Denis & Schiffermüller, 1775), *O. stabilis* (Denis & Schiffermüller, 1775), *Dryobotodes protea* (Denis & Schiffermüller, 1775) (see Tschorsnig & Herting, 1994).

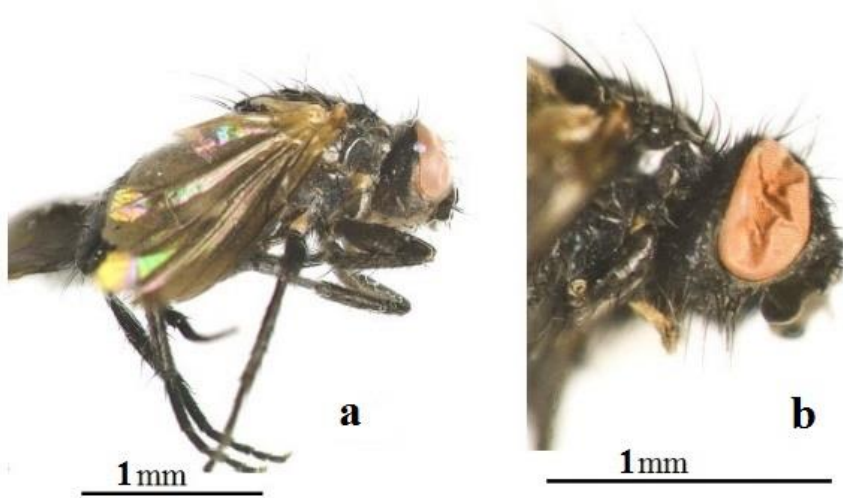


Figure 3. *Bracteola anthracina* Richter, 1972 (male); a. general habitus, lateral view, b. head, lateral view.

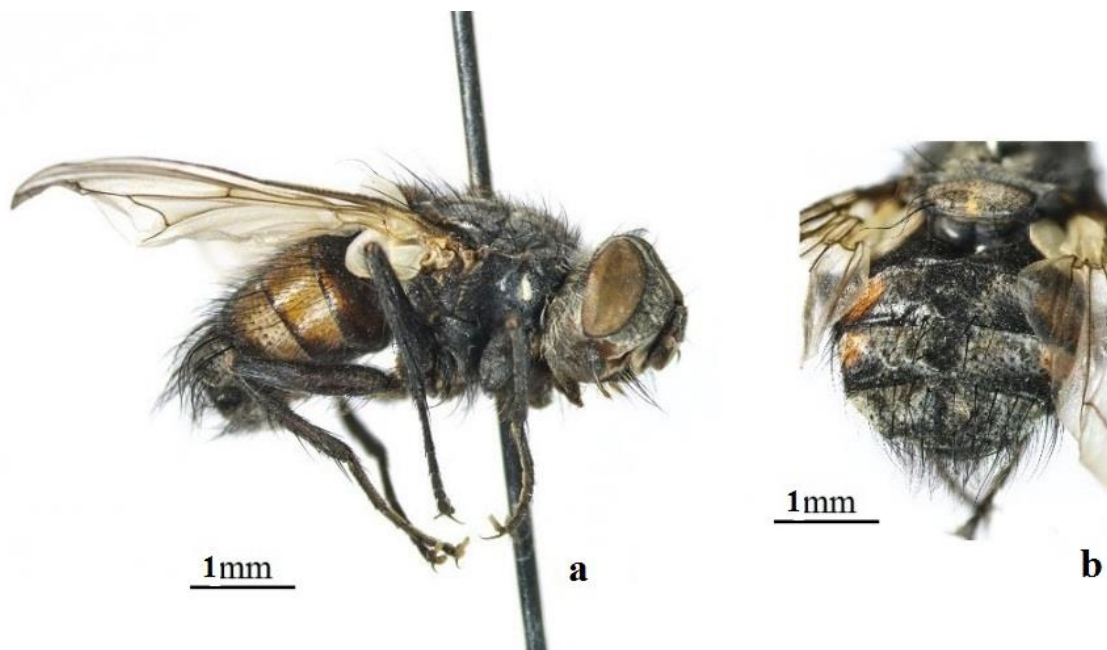


Figure 4. *Ernestia argentifera* (Meigen, 1824) (male); a. general habitus, lateral view, b. abdomen, dorsal view.

Genus: *Gymnochaeta* Robineau-Desvoidy, 1830***Gymnochaeta viridis* (Fallen, 1810)**

Material examined: 1♂, 25.V.2014, West Azerbaijan, Uremia, Marmisho, 37°35'2.70" N, 44°38'7.80" E, 1353m a.s.l., sweep net, leg. F. Seyyedi-Sahebari.

Distribution: Palaearctic: Widely distributed in Europe, Russia (Eastern Siberia, Southern Far East, Western Russia, Western Siberia), Transcaucasia (Azerbaijan), China (East, Northeast), Middle East (Palestine). Iran (Seyyedi-Sahebari et al., 2018).

Host range: Lepidoptera: Noctuidae: *Amphipoea ussuriensis* (Petersen, 1914), *Denticucullus pygmina* (Haworth, 1809), *Mesapamea secalis* (Linnaeus, 1758), *Photodes minima* (Haworth, 1809) (see Tschorsnig, 2017: 262).

Genus: *Zophomyia* Macquart, 1835***Zophomyia temula* (Scopoli, 1763)**

Material examined: 3♂♂, 5♀♀, 1.VI.2010, East Azerbaijan, Maragheh, 38°20'8.22" N, 47°37'14.04" E, 1606m a.s.l., 12♂♂, 14♀♀, 14.VII.2010, East Azerbaijan, Arasbaran, Aynalu, 38°57'11.64" N, 46°43'27.36" E, 782m a.s.l., 4♂♂, 6♀♀, 21.VIII.2012, East Azerbaijan, Arasbaran, Chichakli, 38°37'10.14" N, 46°26'32.16" E, 1534m a.s.l., sweep net, leg. F. Seyyedi-Sahebari; 18♂♂, 14♀♀, 26.V.2013, West Azerbaijan, Khoy, Evoghli, 38°42'43.60" N, 45°12'24.60" E, 968m a.s.l., 9♂♂, 8♀♀, 16.V.2013, West Azerbaijan, Khoy, Pere, 38°44'19.20" N, 44°52'59.82" E, 1405m a.s.l., 12♂♂, 8♀♀, 29.VI.2013, West Azerbaijan, Khoy, Safaiyeh, 38°48'40.60" N, 44°35'21.60" E, 1796m a.s.l., Malaise trap, leg. A. Pourhaji; 3♂♂, 4♀♀, 17.V.2013, East Azerbaijan, Horand, 38°55'59.10" N, 47°18'2.04" E, 1288m a.s.l., 1♂, 2♀♀, 23.V.2013, East Azerbaijan, Horand, Qere Dervish, 38°54'55.56" N, 47°16'56.1" E, 1365m a.s.l., 5♀♀, 12.V.2013, East Azerbaijan, Jolfa, Livarjan, 38°49'24.06" N, 45°42'15.3" E, 1158m a.s.l., 7♂♂, 12♀♀, 2.IV.2013, East Azerbaijan, Jolfa, Siyeh-Roud,

38°53'13.2" N, 45°57'33.18" E, 685 m a.s.l., 9♂♂, 17♀♀, 2.IV.2013, 5♂♂, 9♀♀, 2.IV.2013, East Azerbaijan, Jolfa, Siyeh-Roud, 38°53'51.6" N, 45°47'52.26" E, 738m a.s.l., 3♂♂, 8♀♀, 2.IV.2013, East Azerbaijan, Jolfa, Siyeh Roud, 38°49'35.82" N, 45°46'14.7" E, 895m a.s.l., 2♂♂, 2♀♀, 17.V.2013, East Azerbaijan, Ahar, Varzeghan, 38°27'40.20" N, 46°9'4.62" E, 2351m a.s.l., 3♂♂, 8♀♀, 1.VII.2013, East Azerbaijan, Keleyber, 38°51'4.62" N, 46°59'55.92" E, 1367m a.s.l., 3♂♂, 9♀♀, 25.V.2013, East Azerbaijan, Arasbaran, Khumarlu, 38°59'16.08" N, 46°54'0.24" E, 1027m a.s.l., sweep net, leg. S. Khaghaninia; 1♂, 27.V.2011, Mazandaran, Ghaznasara, 36°16'58.08" N, 52°10'55.62" E, 2013m a.s.l., 1♂, 4.VI.2011, Mazandaran, Ghaznasara, 36°16'56.82" N, 52°10'58.50" E, 2013m a.s.l., Malaise trap, leg. A. Nadimi.

Distribution: Palaearctic: Widely distributed in East and South Europe also from Norway in Scandinavia, Turkey, Kazakhstan, Russia (Eastern Siberia, Southern Far East, Western Russia, Western Siberia), Transcaucasia, China (Northeast). Iran (Seyyedi-Sahebari et al., 2013).

Host range: Unknown.

Genus: *Loewia* Egger, 1856***Loewia Brevifrons* (Rondani, 1856)**

Material examined: 1♂, 17.V.2014, East Azerbaijan, Horand, 38°55'59.10" N, 47°18'2.04" E, 1288 m a.s.l., 1♂, 2♀♀, 6.V.2014, East Azerbaijan, Horand, 38°45'45.12" N, 47°21'20.22" E, 1199 m a.s.l., sweep net, leg. F. Seyyedi-Sahebari.

Distribution: Palaearctic: From Austria, France and Switzerland in West Europe, Romania in East Europe also from Bosnia & Herzegovina, Bulgaria, Croatia, Greece, Italy in south Europe, Turkey, Russia (Western Russia), Transcaucasia. Iran (Seyyedi-Sahebari et al., 2018).

Host range: Chilopoda: Lithobiidae: *Eupolybothrus fasciatus* (Newport, 1845) (see Tschorsnig, 2017: 263).

TRIBE: BRACHYMERINI

Genus: *Brachymera* Brauer & Bergenstamm, 1889

Brachymera rugosa (Mik, 1863)

Material examined: 1♂, 23.V.2013, East Azerbaijan, Horand, Qere Dervish, 38°54'55.56" N, 47°16'56.10" E, 1365m a.s.l., 1♂, 25.VII.2014, West Azerbaijan, Uremia, Marmisho, 37°35'2.70" N, 44°38'7.80" E, 1353m a.s.l., sweep net, leg. F. Seyyedi-Sahebari.

Distribution: Palaearctic: Widely distributed in Europe, Mongolia, Russia (Eastern Siberia), Transcaucasia. Iran (Seyyedi-Sahebari et al., 2018).

Host range: Hymenoptera: Megalodontesidae: *Megalodontes cephalotes* (Fabricius, 1781) (see Tschorsnig, 2017: 263).

TRIBE: MACQUARTIINI

Genus: *Macquartia* Robineau-Desvoidy, 1830

Identification key for species of the genus *Macquartia* collected in northern Iran

1. Middorsal depression on abdominal syntergite 1+2 extending back to hind margin of that segment; scutum with 4 dorsocentral setae behind the suture.....
..... *M. tessellum* (Meigen)
- . Middorsal depression on abdominal syntergite 1+2 not extending back to hind margin of that segment; scutum with 3 dorsocentral setae behind the suture.....2
2. Middle tibia with one anterodorsal setae; tergite 3 with a complete row of marginal setae; calyptrae standing off from the thorax..... *M. grisea* (Fallén) (Fig. 6)
- . Middle tibia with 2–5 anterodorsal setae; tergite 3 with 2–4 dorsal marginal setae...
.....3
3. Parafacial completely hairy; middle and hind tibia in male yellow.....
..... *M. dispar* (Fallén) (Fig. 5)

- . Parafacial hairy in their upper half; legs black.....4

4. Calyptrae standing off; frons in males about as wide as the 3rd antennal segment..... *M. praefica* (Meigen)

- . Inner edge of the calyptrae lying close to the thorax, frons in males as wide as 1/3–2/3 of the 3rd antennal segment.....5

5. Hind tibia with 3 dorsal apical spurs, the central one sometimes very short; tergite 2 as a rule with 2 dorsal marginal setae. Females: abdomen shiny black, with only very light dusting.....
..... *M. tenebricosa* (Meigen) (Fig. 7)

- . Hind tibia with 2 dorsal apical spurs; tergite 2 without dorsal marginal setae. Females: abdomen with a weak greenish shine, more clearly dusted, with iridescent spots..... *M. chalconota* (Meigen)

Macquartia chalconota (Meigen, 1824)

Material examined: 1♂, 3.VII.2010, East Azerbaijan, Arasbaran, Chichakli, 38°31'22.02" N, 46°32'6.66" E, 1733m a.s.l., 1♂, 1♀, 1.V.2011, East Azerbaijan, Azarshahr, Goonbarf, 37°42'50.52" N, 46°13'8.64" E, 2189m a.s.l., 1♂, 10.VI.2014, West Azerbaijan, Khoy, 38°34'13.20" N, 44°50'53.76" E, 1305m a.s.l., 2♂♂, 21.VI.2014, East Azerbaijan, Arasbaran, Oskulu, 38°51'30.90" N, 46°52'24" E, 1721m a.s.l., sweep net, leg. F. Seyyedi-Sahebari; 1♂, 2♀♀, 29.VI.2014, West Azerbaijan, Khoy, Galavans, 38°41'24" N, 44°39'00" E, 2044m a.s.l., Malaise trap, leg. A. Pourhaji.

Distribution: Palaearctic: Widely distributed in Europe, Russia (Western Russia), Transcaucasia, China. Iran (Seyyedi-Sahebari et al., 2013).

Host range: Coleoptera: Chrysomelidae: *Chrysolina herbacea* (Duftschmid, 1825) and *Entomoscelis adonidis* (Pallas, 1771) (see Tschorsnig, 2017: 264).

Macquartia dispar* (Fallén, 1820)

(Fig. 5a–b)

Material examined: 1♂, 21.V.2014, East Azerbaijan, Arasbaran, Aynalu, 38°55'10.50" N, 46°47'24.18" E, 1385m a.s.l., sweep net, leg. F. Seyyedi-Sahebari.

Diagnostic characters: Parafacial hairy in upper half; pre-alar setae at least as long as the distance of its base to the posterior edge of the postpronotum; middle and hind tibia yellow; basicosta, pedicel and femur black; mid tibia with 2–5 antrodorsal setae; tergite 3 with a dark trapezoid spot in the pruinescence (seen obliquely from behind).

Distribution: Palaearctic: Widely distributed in Europe and Scandinavia countries, Russia (Eastern Siberia, Southern Far East, Western Russia), Transcaucasia, Mongolia, China (West and Central). **New record for Iran.**

Host range: Coleoptera: Chrysomelidae: *Chrysolina americana* (Linnaeus, 1758), *C. sanguinolenta* (Linnaeus, 1758), *Colaphus sophiae* (Schaller, 1783), *Timarcha normanna* (Reiche, 1872) (see Tschorsnig, 2017: 265).

Macquartia grisea* (Fallén, 1810)

(Fig. 6)

Material examined: 1♂, 29.X.2010, Gilan, Roodsar, Orkom, 36°45'44.34" N, 50°18'11.88" E, 1201 m a.s.l., Malaise trap, leg. M. Kheirandish.

Diagnostic characters: Parafacial completely hairy; calypter standing off from the thorax; mid tibia with 1 antrodorsal setae; tergite 2 with dorsal marginal setae, tergite 3 with discal and a complete row of marginal setae; abdomen uniformly covered with dense grey pruinescence.

Distribution: Palaearctic: Widely distributed in Europe and Scandinavia countries, Russia (Western Russia), Transcaucasia (Georgia). **New record for Iran.**

Host range: Coleoptera: Chrysomelidae: *Chrysolina fastuosa* Scopoli, 1763, *C. oricalcia* (Muller, 1776), *C. sanguinolenta* (Linnaeus, 1758) (see Tschorsnig, 2017: 265).

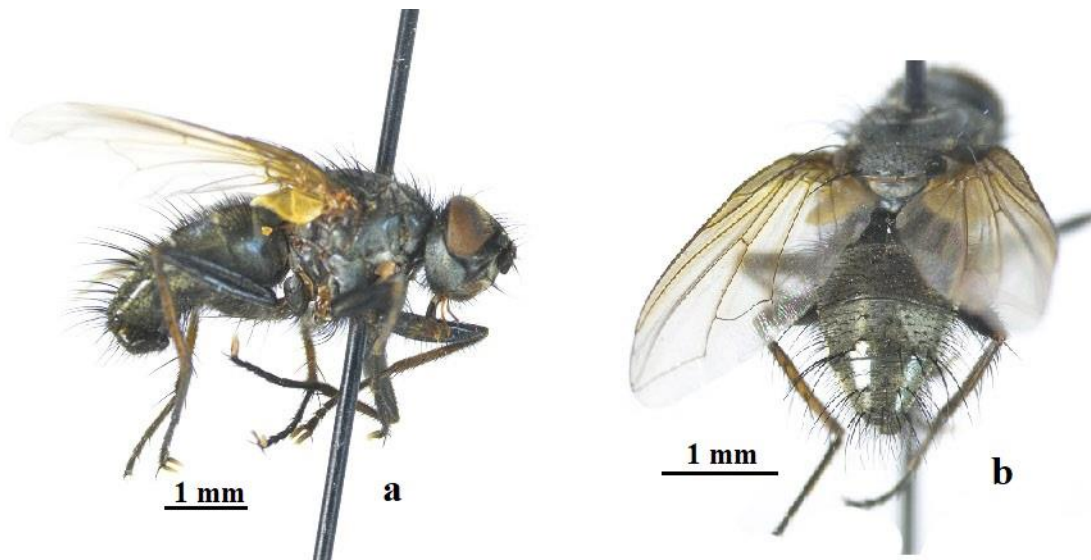


Figure 5. *Macquartia dispar* (Fallén, 1820) (male); **a.** general habitus, lateral view, **b.** abdomen, dorsal view.

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Figure 6. *Macquartia grisea* (Fallén, 1810) (male); general habitus, Lateral view.

***Macquartia praefica* (Meigen, 1824)**

Material examined: 1♀, 10.V.2010, Gilan, Roodsar, Ziaz, 36°52'27.18" N, 50°13'24.78" E, 490m a.s.l., Malaise trap, leg. M. Kheirandish; 2♀♀, 1.V.2011, East Azerbaijan, Azarshahr, Goonbarf, 37°43'12.18" N, 46°12'32.82" E, 2167m a.s.l., 1♂, 2♀♀, 21.IX.2010, East Azerbaijan, Arasbaran, Chichakli, 38°37'10.14" N, 46°26'32.16" E, 1534m a.s.l., 1♂, 2♀♀, 21.IX.2010, East Azerbaijan, Arasbaran, Chichakli, 36°41'2.82" N, 46°31'50.40" E, 1788m a.s.l., 2♂♂, 26.VII.2014, West Azerbaijan, Uremia, Marmisho, 37°17'14.70" N, 45°7'55.20" E, 1125m a.s.l., sweep net, leg. S. Khaghaninia.

Distribution: Widely distributed in Europe, Middle East (Palestine), Transcaucasia. Iran (Seyyedi-Sahebari et al., 2013).

Host range: Unknown.

Macquartia tenebricosa* (Meigen, 1824) (Fig. 7a–b)

Material examined: 1♀, 20.IV.2010, Gilan, Astaneh-Ashrafieh, Eshman-Kamachal, 37°22'3.66" N, 49°57'57.84" E, 1m a.s.l., 1♂, 12.V.2010, Gilan, Roodsar, Orkom, 36°45'44.34" N, 50°18'11.88" E, 1201m a.s.l., Malaise trap, leg. M. Kheirandish; 1♀, 27.VIII.2011, Mazandaran, Tanghevaz, 36°21'55.02" N, 52°6'10.74" E, 692m a.s.l., Malaise trap, leg. A. Nadimi.

Diagnostic characters: Parafacial bare in upper half; inner edge of the calypter lying close to the thorax; hind tibia with 3 dorsal apical spurs, the central one sometimes very short; tergite 2 with 2 dorsal marginal setae; basicosta and legs black (Fig. 7a); abdomen of male uniformly covered with dense pruinescence (Fig. 7b) and in female shiny black.

Distribution: Palearctic: Widely distributed in Europe and Scandinavia countries, Russia (Eastern Siberia, Western Russia), Middle East (Palestine), Mongolia, Transcaucasia, China (West and Central).
New record for Iran.

Host range: Coleoptera: Chrysomelidae: Many species of the genus *Chrysolina* Motschulsky and *Ambrostoma quadriimpressum* (Motschulsky, 1845) (see [Tschorsnig, 2017](#): 265).

***Macquartia tessellum* (Meigen, 1824)**

Material examined: 1♂, 11.VI.2010, Gilan, Roodsar, Ghazichak, 36°45'57.54" N, 50°19'35.22" E, 1803m a.s.l., Malaise trap, leg. M. Kheirandish; 3♂♂, 21.IX.2010, East Azerbaijan, Arasbaran, Chichakli, 38°37'10.14" N, 46°26'32.16" E, 1534m a.s.l., 2♀♀, 12.V.2013, East Azerbaijan, Jolfa, Livarjan, 38°49'24.06" N, 45°42'15.3" E, 1158m a.s.l., 4♂♂, 1♀, 21.VI.2014, East Azerbaijan, Arasbaran, Oskulu, 38°51'30.09" N, 46°52'24" E, 1721m a.s.l., 1♂, 2♀♀, 26.VII.2014, West Azerbaijan, Uremia, Marmisho, 37°17'14.70" N, 45°7'55.20" E, 1125m a.s.l., sweep net, leg. S. Khaghaninia.

Distribution: Palaearctic: Widely distributed in West Europe and South Europe, Middle East (Palestine), Central Asia (Tajikistan, Turkmenistan), Transcaucasia (Armenia), China; North Africa (Canary Islands); Oriental: India. Iran ([Samet et al., 1977](#)).

Host range: Coleoptera: Chrysomelidae: *Colaphus palaestinus* Achard, 1923, *Colaphus sophiae* (Schaller, 1783), *Entomoscelis adonidis* (Pallas, 1771), *Gonioctena olivacea* (Forster, 1771) and some species of the genus *Chrysolina* Motschulsky (see [Tschorsnig, 2017](#): 266).

TRIBE: TRIARTHRIINI

Genus: *Graphogaster* Rondani, 1868

***Graphogaster vestita* Rondani, 1868**

Material examined: 2♂♂, 2♀♀, 14.VII.2010, East Azerbaijan, Arasbaran, Aynalu, 38°57'11.64" N, 46°43'27.36" E, 782 m a.s.l., sweep net, leg. F. Seyyedi-Sahebari; 8♂♂, 1.VI.2013, West Azerbaijan, Khoy, Safaiyeh, 38°48'12" N, 44°35'25" E, 1796m a.s.l., Malaise trap, leg. A. Pourhaji.

Distribution: Palaearctic: From Bulgaria, Croatia, Greece, Italy, Portugal, Spain in South Europe and Ukraine in East, Turkey, Middle East (Palestine), North Africa (Tunisia), Russia (Western Russia), Transcaucasia (Georgia). Iran ([Seyyedi-Sahebari et al., 2018](#)).

Host range: Unknown.

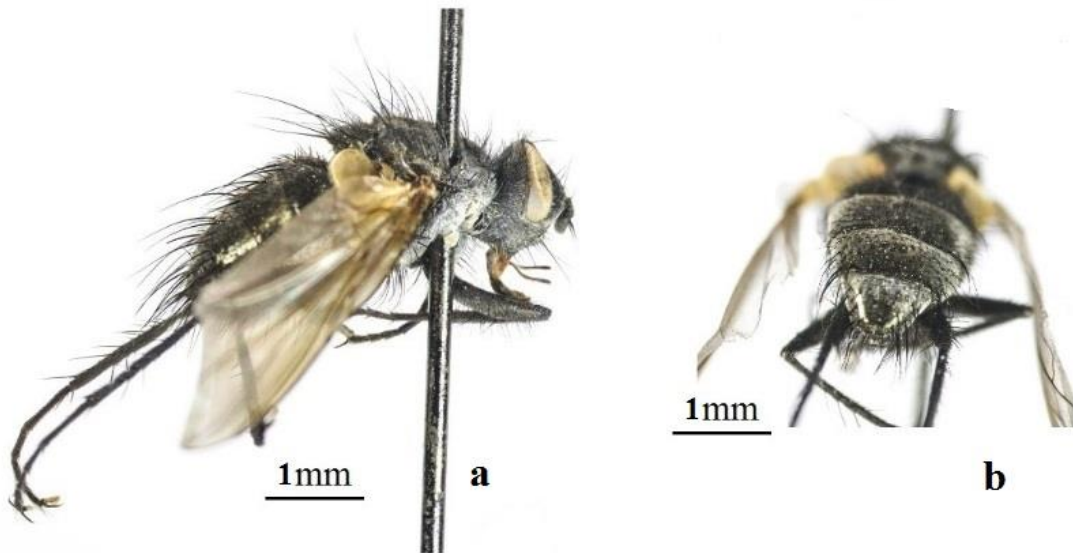


Figure 7. *Macquartia tenebricosa* (Meigen, 1824) (male); a. general habitus, lateral view, b. abdomen, dorsal view.

Genus: *Triarthria* Stephens, 1829

***Triarthria setipennis* (Fallén, 1810)**

Material examined: 1♀, 4. V.2010, Gilan, Astaneh-Ashrafieh, Eshman-Kamachal, 37°22'3.66" N, 49°57'57.84" E, 1m a.s.l., Malaise trap, leg. M. Kheirandish; 1♂, 26.VIII.2011, Mazandaran, Tanghevaz, 36°21'55.68" N, 52°6'10.32" E, 702m a.s.l., Malaise trap, leg. A. Nadimi; 1♂, 16.V.2013, West Azerbaijan, Khoy, Galavans, 38°41'24" N, 44°39'00" E, 2044m a.s.l., Malaise trap, leg. A. Pourhaji.

Distribution: Palaearctic: Widely distributed in Europe and Scandinavia countries, Russia (Southern Far East, Western Russia), Transcaucasia, Central Asia, Middle East (Palestine). Iran (Seyyedi-Sahebari et al., 2013).

Host range: Dermoptera: Forficulidae: *Apterygida media* (Hagenbach, 1822) and *Forficula auricularia* (Linnaeus, 1758) (see Tschorsnig, 2017: 266–267).

TRIBE: SIPHONIINI

Genus: *Actia* Robineau-Desvoidy, 1830

Identification key for species of the genus *Actia* collected in northern Iran

- 1. R₁, R₄₊₅ and Cu₁ veins with setae.....
..... *A. crassicornis* Mesnil (Fig. 8)
- . R₁ and R₄₊₅ veins with setae but Cu₁ bare..... *A. infantula* (Zetterstedt) (Fig. 9)

Actia crassicornis* Mesnil, 1952

(Fig. 8)

Material examined: 1♂, 11.VI.2010, Gilan, Roodsar, Orkom, 36°45'44.34" N, 50°18'11.88" E, 1201m a.s.l., Malaise trap, leg. M. Kheirandish; 1♂, 3.VI.2011, Mazandaran, Joorband, 36°26'17.28" N, 52°7'13.62" E, 272m a.s.l., Malaise trap, leg. A. Nadimi.

Diagnostic characters: Antenna and palpus yellow; parafacial at the narrowest point 2.5-3 times as wide as the base of the arista scutellum brownish yellow; legs black;

abdomen in male for most part yellowish red; tergites without median discal setae.

Distribution: Palaearctic: Widely distributed in Europe and Scandinavia countries, Russia (Eastern Siberia, Southern Far East, Western Russia, Western Siberia), Kazakhstan, Transcaucasia, Japan, South Korea, China (Central, Northeast), Mongolia, Middle East (Saudi Arabia), North Africa (Egypt); Oriental: China (East). **New record for Iran.**

Host range: Lepidoptera: Gelechiidae: *Mirificarma lentiginosella* (Zeller, 1839); Plutellidae: *Rhigognostis incarnatella* (Steudel, 1873); Tortricidae: *Ancylis mitterbacheriana* (Denis & Schiffermüller, 1775), *Sparganothis pilleriana* (Denis & Schiffermüller, 1775), *Tortrix viridana* Linnaeus, 1758, *Zeiraphera isertana* (Fabricius, 1794); Elachistidae: many species of the genera *Agonopterix* Hübner and *Depressaria* Haworth (see Tschorsnig, 2017: 273–274).

Actia infantula* (Zetterstedt, 1844)

(Fig. 9)

Material examined: 1♀, 9.IX.2010, Gilan, Astaneh-Ashrafieh, Eshman-Kamachal, 37°21'10.50" N, 49°57'56.16" E, 2m a.s.l., Malaise trap, leg. M. Kheirandish.

Diagnostic characters: 2th segment of arista about 1–2 times as long as its diameter, 3th segment of arista thickened for 1/3–2/5 of its length; parafacial at the narrowest point 1–1.5 times as wide as the thickened part of the arista; tergites on 2/3–5/6 of their length covered with pruinescence.

Distribution: Palaearctic: Widely distributed in Europe, Middle East (Palestine), Russia (Eastern Siberia), Transcaucasia. **New record for Iran.**

Host range: Lepidoptera: Tineidae: *Monopis rusticella* (Hübner, 1796) (see Tschorsnig, 2017: 274).

Genus: *Peribaea* Robineau-Desvoidy, 1863

***Peribaea tibialis* Robineau-Desvoidy, 1830**

Material examined: 3♀♀, 27.VI.2010, 1♀, 10.VII.2010, 10♂♂,14♀♀, 29.VII.2010, 1♀, 10.IX.2010, Gilan, Astaneh-Ashrafieh, Eshman-Kamachal, 37°21'10.50" N, 49°57'56.16" E, 2m a.s.l., 2♀♀, 20.VII.2010, 2♀♀, 29.VIII.2010, 1♂,4♀♀, 20.VIII.2010, 1♂, 1♀, 20.IX.2010, Gilan, Astaneh-Ashrafieh, Eshman-Kamachal, 37°22'3.66" N, 49°57'57.84" E, 1m a.s.l., 1♂, 26.V.2010, 1♂, 26.V.2010, Gilan, Roodsar, Ziaz, 36°52'27.18" N, 50°13'24.78" E, 490m a.s.l., 1♀, 10.VI.2010, 1♂, 20.VIII.2010, Gilan, Roodsar, Ghazichak, 36°45'57.54" N, 50°19'35.22" E, 1803m a.s.l., Malaise trap,

leg. M. Kheirandish; 3♂♂, 3.VI.2011, 1♀, 3.VII.2011, 3♂♂,10♀♀, 4.VIII.2011, 1♂,2♀♀, 25.VIII.2011, 2♂♂,5♀♀, 25.IX.2011, 4♂♂,15♀♀, 3.X.2011, Mazandaran, Joorband, 36°26'15.54" N, 52°7'13.50" E, 275m a.s.l., 8♂♂,6♀♀, 26.IV.2011, 2♀♀, 26.VIII.2011, Mazandaran, Tanghevaz, 36°21'55.68" N, 52°6'10.32" E, 702m a.s.l., 1♂, 26.VII.2011, 2♂♂, 3.VII.2011, 2♂♂, 3.VIII.2011, 1♂,2♀♀, 26.IX.2011, 3♀♀, 3.X.2011, 1♂,1♀, 26.X.2011, Mazandaran, Tanghevaz, 36°21'55.02" N, 52°6'10.74" E, 692m a.s.l., 1♀, 25.V.2011, 1♂, 26.VI.2011, 1♂, 26.VII.2011, 1♂,4♀♀, 3.VIII.2011, 2♂♂, 26.VII.2011, 17♂♂,11♀♀, 3.X.2011, Mazandaran, Noor, 36°34'52.98" N, 52°2'45.78" E, 14m a.s.l., Malaise trap, leg. A. Nadimi.



Figure 8. *Actia crassicornis* Mesnil, 1952 (male); general habitus, lateral view.

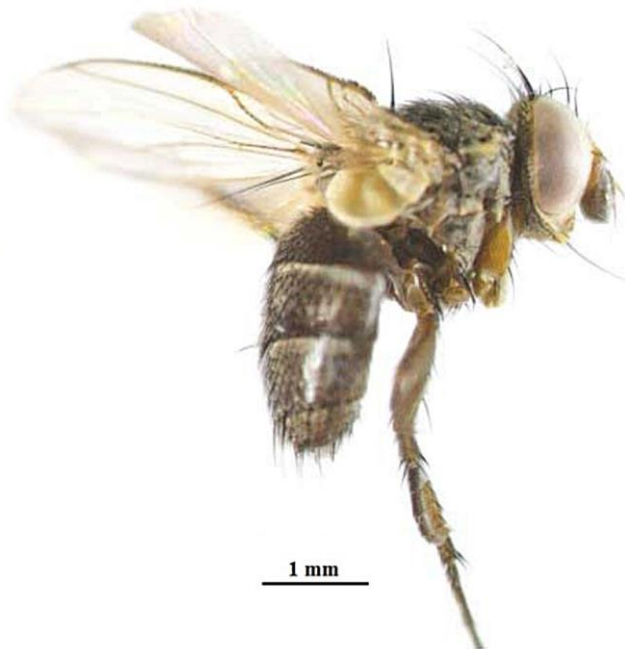


Figure 9. *Actia infantula* (Zetterstedt, 1844) (female); general habitus, lateral view.

Distribution: Palaearctic: Widely distributed in Europe, Russia (Eastern Siberia, Southern Far East, Western Russia), Central Asia (Uzbekistan), Middle East (Palestine), Mongolia, Turkey, Transcaucasia (Azerbaijan), Japan, South Korea, China (Central, Northeast, South-central), North Africa (Morocco); Oriental: China (East), Myanmar, Taiwan. Iran (Samet et al., 1977).

Host range: Lepidoptera: Crambidae: *Ostrinia nubilalis* (Hübner, 1796); Lasiocampidae: *Lasiocampa grandis* (Rogenhofer, 1891) and *Lasiocampa terreni* (Herrich-Schäffer, 1847); Notodontidae: *Furcula furcula* (Clerck, 1759) and many genera and species of Noctuidae, Lymantriidae, Geometridae, Arctiidae (see Tschorsnig, 2017: 281–283); Erebidae: *Phragmatobia fuliginosa* (Linnaeus, 1758) (Tschorsnig & Herting, 1994; Abbasipour & Taghavi, 2006).

Genus: *Siphona* Meigen, 1803

Siphona paludosa Mesnil, 1960* (Fig. 10a–b)

Material examined: 1♀, 3.VII.2011, Mazandaran, Tanghevaz, 36°21'55.02" N, 52°6'10.74" E, 692m a.s.l., Malaise trap, leg. A. Nadimi.

Diagnostic characters: Scape and pedicel yellow; base of postpedicel yellow on the inside (Fig. 10b); prosternum bare; scutum with 4 dorsocentral setae behind the suture; tegula black, basicosta light yellow, 2th section of costal vein about half of 3th; legs yellow; tergite 2 without dorsal marginal setae; abdomen black and reddish yellow laterally (Fig. 10a).

Distribution: Palaearctic: Widely distributed in Europe and Scandinavia countries, Russia (Eastern Siberia, Southern Far East, Western Russia and Western Siberia), Japan, Mongolia, China. **New record for Iran.**

Host range: Unknown.

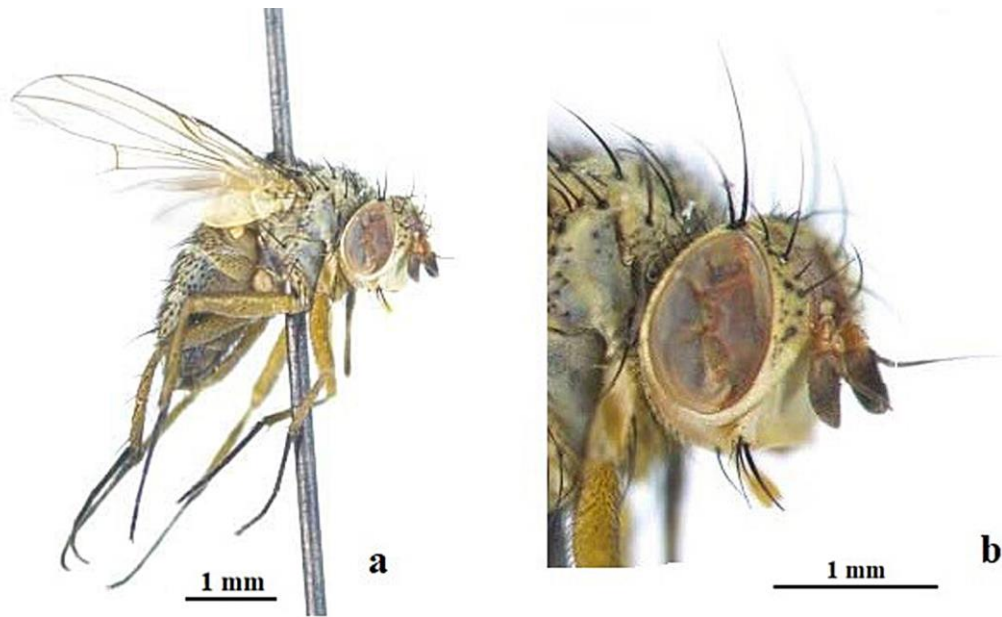


Figure 10. *Siphona paludosa* Mesnil, 1960 (female); **a.** general habitus, lateral view, **b.** head, lateral view.

TRIBE: LESKIINI

Genus: *Aphria* Robineau-Desvoidy, 1830

***Aphria longirostris* (Meigen, 1824)**

Material examined: 1♀, 27.VIII.2011, Mazandaran, Tanghevaz, 36°21'55.68" N, 52°6'10.32" E, 702m a.s.l., Malaise trap, leg. A. Nadimi.

Distribution: Palaearctic: Widely distributed in the Europe, also known from Middle East (Palestine), Mongolia, Russia (Eastern Siberia, Western Russia), Turkey and Transcaucasia. Oriental: China (East). Iran (Gheibi et al., 2010).

Host range: Lepidoptera: Pyralidae: *Sciota rhenella* (Zincken, 1818) (see Tschorsnig, 2017: 287).

Genus: *Bithia* Robineau-Desvoidy, 1863

***Bithia maculifacies* Tschorsnig & Kara, 2002* (Fig. 11a-b)**

Material examined: 2♀♀, 26.VI.2014, West Azerbaijan, Khoy, Galavans, 38°41'24" N, 44°39'00" E, 2044m a.s.l., Malaise trap, leg. A. Pourhaji.

Diagnostic characters: Arista short pubescent and parafacial bare; pedicel and basal 1/2-2/3 of palpus yellow (Fig. 11a); R₄₊₅ at the base setose; apical 1/3 of scutellum yellow, with erect crossed apical setae; tergites uniformly covered with goldish pruinescence (Fig. 11b).

Distribution: Palaearctic: Turkey. **New record for Iran.**

Host range: Unknown.

TRIBE: MINTHOINI

Genus: *Mintho* Robineau-Desvoidy, 1830

***Mintho rufiventris* (Fallén, 1817)**

Material examined: 1♀, 27.VI.2010, 1♀, 11.VI.2010, 1♀, 10.IX.2010, Gilan, Roodsar, Ghazichak, 36°45'57.54" N, 50°19'35.22" E, 1803m a.s.l., Malaise trap, leg. M. Kheirandish; 2♀♀, 14.VII.2010, East Azerbaijan, Arasbaran, Aynalu, 38°57'11.64" N, 46°43'27.36" E, 782 m a.s.l., 2♂♂, 2♀♀, 7.VII.2010, East Azerbaijan, Arasbaran, Chichakli, 38°30'20.52" N, 46°37'14.04" E, 1689m a.s.l., 1♂, 12.V.2013, East Azerbaijan, Jolfa, Livarjan, 38°49'24.06" N, 45°42'15.3" E, 1158m a.s.l., sweep net, leg. F. Seyyedi-Sahebari.

Distribution: Palaearctic: Widely distributed in Europe and Scandinavia countries, Central Asia (Turkmenistan), China (Central, East, Northeast), Middle East (Palestine), Mongolia, Russia (Eastern Siberia, Southern Far East, Western Russia, Western Siberia), Transcaucasia (Azerbaijan). Iran (Gheibi et al., 2010).

Host range: Lepidoptera: Crambidae: *Ostrinia nubilalis* (Hübner, 1786); Pyralidae: *Apomyelois ceratoniae* (Zeller, 1839), *Cadra cautella* (Walker, 1863) and *Hypsopygia glaucinalis* (Linnaeus, 1758); Sesiidae: *Bembecia ichneumoniformis* (Denis & Schiffermüller, 1775) (see Tschorsnig, 2017: 291).

TRIBE: MEGAPROSOPINI

Genus: *Microphthalma* Macquart, 1844

***Microphthalma europaea* Egger, 1860**

Material examined: 2♂♂, 1♀, 20.VI.2010, 1♀, 1.VIII.2010, 1♂, 15.VIII.2010, 1♂, 1♀, 10.VIII.2010, Gilan, Astaneh-Ashrafieh, Eshman-Kamachal, 37°21'10.50" N, 49°57'56.16" E, 2m a.s.l., 1♀, 11.X.2010, Gilan, Astaneh-Ashrafieh, Eshman-

Kamachal, 37°22'3.66" N, 49°57'57.84" E, 1m a.s.l., 1♂, 27.VII.2010, Gilan, Roodsar, Orkom, 36°45'44.34" N, 50°18'11.88" E, 1201m a.s.l., Malaise trap, leg. M. Kheirandish; 1♀, 27.VII.2011, Mazandaran, Joorband, 36°26'15.54" N, 52°7'13.50" E, 275m a.s.l., 1♀, 4.VIII.2011, Mazandaran, Ghaznasara, 36°16'56.82" N, 52°10'58.5" E, 2032m a.s.l., Malaise trap, leg. A. Nadimi; 1♂, 3.VIII.2013, East Azerbaijan, Arasbaran, Chichakli, 38°30'20.52" N, 46°37'14.04" E, 1689m a.s.l., 2♂♂, 1♀, 19.VII.2011, East Azerbaijan, Arasbaran, Makidi valley, 38°50'29.22" N, 46°54'11.34" E, 1656m a.s.l., sweep net, leg. S. Khaghaninia.

Distribution: Palaearctic: Widely distributed in Europe, Middle East (Saudi Arabia), Central Asia (Turkmenistan), Russia (Western Russia, Western Siberia), Transcaucasia; North Africa (Algeria); Oriental: India. Iran (Salehi, 1977).

Host range: Coleoptera: Many genera and species of Scarabaeidae (see Tschorsnig, 2017: 291-292).

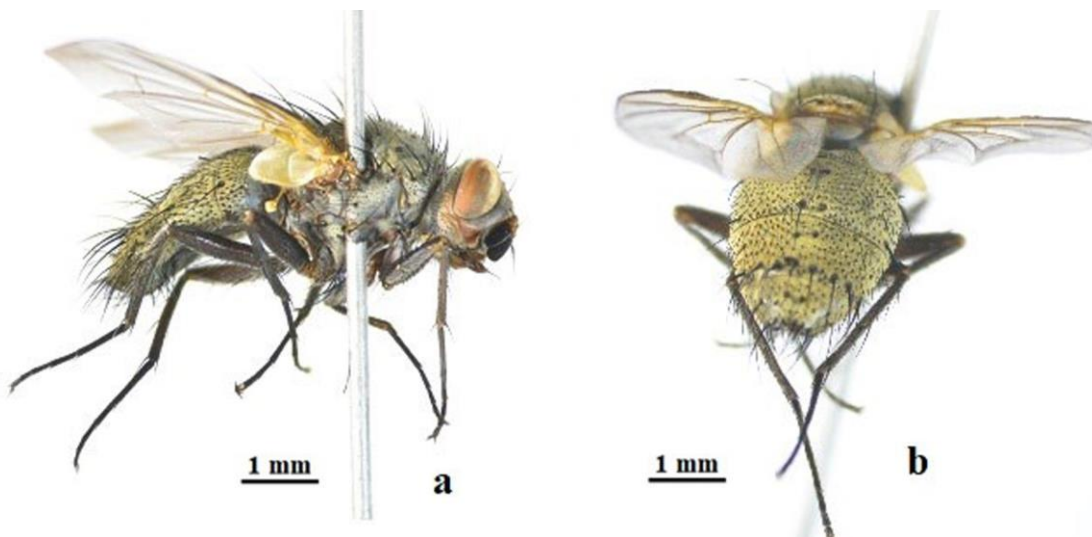


Figure 11. *Bithia maculifacies* Tschorsnig & Kara, 2002 (female); a. general habitus, lateral view, b. abdomen, lateral view.

Discussion

The present study with 37 identified species increases the number of known Iranian Tachininae species from 45 to 56. Eleven tribes of the subfamily Tachininae were reviewed, that the most speciose tribe, Tachinini, comprises 4 genera and 10 species. It is followed by the tribe Ernestiini with 5 genera and 5 species in the studied area. Ernestiini is a large tribe with 22 genera in the Palaearctic region. The genus *Bracteola* Richter is a monotypic genus and *Bracteola anthracina* has been described from Caucasus and Transcaucasia areas. The tribe Siphoniini was presented with 3 genera and 4 species here. The species *Preibaea tibialis* has the highest frequency in collections using Malaise traps in Gilan and Mazandaran provinces. It is known as the important larvae parasitoid of the rice armyworm, *Mythimna unipuncta* (Haworth, 1809) from Gilan province (Abbasipour & Taghavi, 2006). The genus *Siphona* Meigen has been recorded by Gheibi et al. (2010) from Fars province of Iran. Herein we are recording the species *Siphona paludosa* from Mazandaran province. The occurrence of this species from Tokat province in the northern Turkey was detected previously as well (Kara, 1999). The tribes Nemoraeni, Brachymerini, Macquartini, Minthoini and Megaprosopini each were presented with one genus in this study.

The genus *Macquartia* Robineau-Desvoidy with 6 species is the most diverse genus. Species of *Macquartia* are all known as parasitoids of larvae of the family Chrysomelidae (Tschorsnig, 2017). The genus *Nemoraea* Robineau-Desvoidy is first findings for Iran, but has wide West Palaearctic, Disjunct Palaearctic, Afrotropical and Oriental distributions with 10 species (O'Hara, et al. 2019). *Nemoraea pellucida* has been already recorded from adjacent countries of Turkey and Transcaucasia (Herting & Dely-Draskovits, 1993; Kara, 1999). This species known as parasitoid of the

numerous families of the Lepidoptera, such as Sphingidae, Lymantriidae and Pyralidae.

The species *Zophomya temula* has the highest frequency in collections using sweep net and Malaise traps in the regions studied. This species was followed in frequency by *Tachina magnicornis*, a parasitoid of larvae of the families Noctuidae, Lasiocampidae, Lymantriidae and Pyralidae (Lepidoptera), which is common in different parts of Iran. Of the 37 identified species, 14 species (37.83 %) are rare and represented with only one specimen totally.

The study areas in north and northwest Iran are endowed with very diverse nature, such as meadows, seaside, rice fields and deciduous forests that are the habitats of many Lepidoptera and Coleoptera species. Therefore we expect more species of the Tachininae to occur in these areas.

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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 تاکسونومیک زیرخانواده Tachininae (Diptera: Tachinidae) در شمال ایران، به
همراه گزارش سه جنس و یازده گونه جدید برای فون ایران

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چکیده: این مطالعه مروری بر مگس‌های زیر خانواده Tachininae در دامنه‌های شمالی رشته کوه البرز و شمال غرب ایران از سال ۱۳۸۹ تا ۱۳۹۳ می‌باشد. در مجموع ۲۳ جنس و ۳۷ گونه از زیرخانواده Tachininae بررسی شد که از میان آنها، سه جنس و ۱۱ گونه رکورد جدید برای فون ایران می‌باشند. نمونه‌های مورد بررسی، پراکنش و میزبان‌های گزارش شده آنها ارایه شد. کلیدهای شناسایی ۲۳ جنس و ۳۷ گونه موجود در مناطق مورد مطالعه نیز تهیه شد.

واژگان کلیدی: دوبالان، مگس‌های پارازیتوئید، Tachininae، گزارش‌های جدید، شمال ایران، شمال غرب ایران