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Some of the grass flies (Diptera, Chloropidae) fauna of West Azarbaijan province – Iran

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Abstract: In order to study of the family Chloropidae in West Azarbaijan province- Iran, a study was carried out during 2012-2014. As a result of this study, nine species belonging to 6 genera from 2 subfamilies were identified of which two species, *Platycephala planifrons* (FABRICIUS, 1798), and *Dicraeus beschovskii* NARTSHUK, 2010 are being newly reported from Iran. A list including the genera and species of this family occurring in the region are provided. Furthermore, diagnostic characters and informative photos of the new recorded species are given. An identification key to the studied genera is prepared.

Key words: Chloropidae, Fauna, New record, West Azarbaijan province, Iran.

Introduction

The family Chloropidae, belongs to acalyptrate Diptera, is one the specious families with about 3000 described species worldwide. Since they are more likely to occur in grassy habitats, they are usually known as grass flies (SABROSKY 1987). They can also be found in marshes, low vegetation in forests as well they are frequently collected in great numbers on gramineous plants fields. Grass flies are often phytophagous, the larvae feed on the shoots, flowerheads and seeds of Poaceae, or from leaves, shoots or stems of other plants thus some of them are known as economic pests of cereals. However, sometimes they are saprophytic and feed on the plant tissues that have been damaged by other arthropods (KARPA 2001; VON TSCHIRNHAUS 2002).

Morphologically, this family is smooth, rather bristleless flies, predominantly black or basically yellow with black to brown stripes and maculae and usually 1-7 mm in size. The anal veins are extremely reduced or absent, the frontal triangle is usually such prominent that sometimes it covers the entire frons (NARTSHUK et al. 1988; NARTSHUK & ANDERSSON 2013).

In the recent years some studies have been done about the systematic of this family; DEEMING & AL-DHAFAER (2012) carried out a study in the Arabian Peninsula and reported 119 species belonging to 48 genera. NARTSHUK (2011-2012) conducted a study on the chloropids of Turkey and described three new species, also provided a checklist of the world genera of the family Chloropidae (NARTSHUK 2012a) and described three new species from southern Sardinia (NARTSHUK 2012b). NARTSHUK (2013) recorded 116 species of Chloropidae from several Mediterranean islands. NARTSHUK & ANDERSSON (2013) surveyed the Chloropidae of Fennoscandia and Denmark.

Before this study, *Platycephala isinensis* is described from Iran by KUBIK & BARTÁK (2008). RABIEH et al. (2012) provided a checklist of the Chloropidae in the Markazi province and recorded 6 species for the Iranian fauna. KHAGHANINIA & GHARAJEDAGHI (2013) studied on the chloropids as grassland pests from East Azerbaijan province and reported 6 species for the Iran. KHAGHANINIA et al. (2014a & b) added eleven genera with 18 species to the Iranian checklist of Chloropidae. KARIMPOUR (2014) also reported 2 species as new records for Iran. As the chloropids fauna had been studied poorly in West Azarbaijan province, the objective of this study is faunistic study of this family in the region.

Material and methods

Adult specimens were collected by standard sweep-netting in grassland and wetland habitats from West Azerbaijan, located in northern west of Iran, during 2012- 2014. The samples were killed in a killing jar containing potassium cyanide. The species were identified based on HÄXIGER et al. (2005); NARTSHUK et al. (1988); NARTSHUK (2010); NARTSHUK & ANDERSSON (2013). Hypopygium and ovipositors were cleared in 10% KOH. Images were obtained using a microscope (Nikon SMS 1000) equipped with a camera (Olympus 10 μ).

The material examined is deposited in collections of the following institutions: ICHMM: Insect Collection of Professor Hasan Maleki Milani, University of Tabriz, Tabriz, Iran and CULS: Czech University of Life Sciences collections.

Results

In this study, nine species of 6 genera from West Azerbaijan were identified of which two species *Platycephala planifrons* (FABRICIUS, 1798) and *Dicraeus beschovskii* NARTSHUK, 2010 are newly reported from Iran. Species are listed in alphabetic order.

Key to the studied genera

(Adapted from HÄXIGER et al. (2005); NARTSHUK et al. (1988); NARTSHUK (2010); NARTSHUK & ANDERSSON (2013))

- 1 Vein C along margin of wing reaching to wing vein R₄₊₅ or slightly beyond it. Hypopygium mainly with reduced and fused cerci and edits (Chloropinae).....2
- Vein C along margin of wing completely or slightly reaching to wing vein M₁₊₂. Hypopygium mainly with developed and separated cerci and edits (Oscinellinae).....5
- 2 Head in profile more or less triangular or hind femur distinctly flattened, hind tibia curved.....3
- Head in profile trapezoidal or rounded, hind femur not flattened, hind tibia simple.....4
- 3 Veins R curved toward anterior alar margin of wing *Meromyza* MEIGEN
- Veins R straight..... *Platycephala* (FABRICIUS)
- 4 Surface of scutellum flattened, with convergent apical setae. Hind tibia with developed sensory area..... *Thaumatomyia* ZENKER
- Surface of scutellum rounded, with parallel apical setae. Hind tibia without sensory area..... *Chlorops* MEIGEN

- 5 Second section of vein C not less than three times as long as third section *Dicraeus* LOEW
 - Second section of vein C only 2 times as long as third section *Oscinella* BECKER

Subfamily **C h l o r o p i n a e**

Genus *Chlorops* MEIGEN, 1803

Chlorops figuratus (ZETTERSTEDT, 1848) (Fig. 1)

Material examined: Urmia (Marmisho), 37°35.045'N, 44°38.130'E, 1353m, (2♂♂, 3♀♀), 25 May. 2014; leg. S. Khaghaninia.

Distribution: Eurasian species; Iran (KHAGHANINIA & GHARAJEDAGHI 2013; NARTSHUK & ANDERSSON 2013).

Genus *Meromyza* MEIGEN, 1830

Meromyza nigriventris MACQUART, 1835 (Fig. 2)

Material examined: Khoy: 35°33.067' N, 44°53.006' E, 1238 m, (11♂♂, 8♀♀), 29 Jun. 2013; Khoy: 38°34.220'N, 44°50.896'E, 1305m (5♂♂, 7♀♀), 14 Jun. 2012; Urmia: 37°20.768' N, 45°09.455' E, 1343 m, (7♂♂, 9♀♀), 7 Jul. 2013; leg. S. Khaghaninia.

Distribution: This species has Holarctic distribution; in the Palaearctic Region, from Western Europe to China and Japan, also in Iran (KHAGHANINIA et al. 2014; NARTSHUK & ANDERSSON 2013).

Meromyza saltatrix (LINNAEUS, 1761) (Fig. 3)

Material examined: Khoy: 35°33.067' N, 44°53.006' E, 1238 m, (2♂♂, 3♀♀), 29 Jun. 2013; Urmia: 37°20.768' N, 45°09.455' E, 1343 m, (4♂♂, 2♀♀), 7 Jul. 2013; leg. S. Khaghaninia.

Distribution: This species has Holarctic distribution which in the Palaearctic Region from Europe to China, and in the Nearctic Region, only in Alaska. Also in Iran (BEHDAD 1982; KHAGHANINIA et al. 2014; NARTSHUK & ANDERSSON 2013).

Genus *Platycephala* FALLÉN, 1820

Platycephala planifrons (FABRICIUS, 1798) (Figs 4-6)

Material examined: Urmia (Marmisho), 37°35.045'N, 44°38.130'E, 1353m (1♂), 25 May. 2014; leg. S. Khaghaninia.

Diagnostic characters: Body length 6-8 mm; color yellowish brown; ocellar triangle large, yellow with black central stripes; postpedicel elongated and rounded apically; mesonotum with three dark brown stripes, roughly punctured and separated by pale unpunctured stripes along dorsocentral lines; scutellum nearly squarish with dark brown central stripes; abdomen flattened.

Distribution: Trans-Palaearctic species, reported from the British Isles to Far East of Russia. More frequent in Asian (NARTSHUK & ANDERSSON 2013). **New record species for Iran.**

Genus *Thaumatomyia* ZENKER, 1833***Thaumatomyia notata* (MEIGEN, 1830) (Fig. 7)**

Material examined: Khoy: 35°33.067' N, 44°53.006' E, 1238 m, (6♂♂, 2♀♀), 29 Jun. 2013; Urmia (Marmisho), 37°35.045' N, 44°38.130' E, 1353m (2♂♂, 6♀♀), 25 May. 2014; Urmia: 37°17.350' N, 45°08.083' E, 1473 m, (10♂♂, 5♀♀), 24 May. 2014; leg. S. Khaghaninia.

Distribution: Widespread species; Iran (MODARRES-AWAL 2012; NARTSHUK & ANDERSSON 2013).

***Thaumatomyia sulcifrons* (BECKER, 1907) (Fig. 8)**

Material examined: Khoy: 35°33.067' N, 44°53.006' E, 1238 m, (5♂♂, 2♀♀), 29 Jun. 2013; Urmia: 37°51.678' N, 44°58.388' E, 1602 m, (4♂♂, 8♀♀), 7 Jul. 2013; leg. S. Khaghaninia.

Distribution: South, Kazakhstan; Central Asia. South of Western Europe, Mediterranean; Iran (MODARRES-AWAL 2012; NARTSHUK et al. 1988).

Subfamily *Oscinellinae***Genus *Dicraeus* LOEW, 1873*****Dicraeus beschovskii* NARTSHUK, 2010 (Figs 9, 10)**

Material examined: Urmia (Marmisho), 37°35.045' N, 44°38.130' E, 1353m (1♂), 25 May. 2014; leg. S. KHAGHANINIA.

Diagnostic characters: Color black; ocellar triangle shiny black; face yellow; antenna bicolor yellow and black; postpedicel rounded; arista brown; legs black and yellow; wing dark; abdomen brown dorsally.

Distribution: Greece (NARTSHUK 2010). **New record species for Iran.**

***Dicraeus raptus* (HALIDAY, 1838) (Fig. 11)**

Material examined: Khoy: 38°41.719' N, 44°54.041' E, 1405 m, (2♂♂, 1♀), 14 Jun. 2012; Urmia: 37°20.768' N, 45°09.455' E, 1343 m, (2♂♂, 3♀♀), 7 Jul. 2013; leg. S. KHAGHANINIA.

Distribution: South. Western Europe; Iran (KHAGHANINIA et al. 2014a; NARTSHUK et al. 1988).

Genus *Oscinella* BECKER, 1909***Oscinella frit* (LINNAEUS, 1758) (Fig. 12)**

Material examined: Khoy: 38°41.719' N, 44°54.041' E, 1405 m, (3♂♂, 3♀♀), 14 Jun. 2012; Urmia (Marmisho), 37°35.045' N, 44°38.130' E, 1353 m (3♂♂, 2♀♀), 25 May. 2014; Urmia: 37°20.768' N, 45°09.455' E, 1343 m, (8♂♂, 6♀♀), 7 Jul. 2013; leg. S. Khaghaninia.

Distribution: The species has been found in all zoogeographical regions of the World (MODARRES-AWAL 2012; NARTSHUK & ANDERSSON 2013).

Conclusion

The results show that *Meromyza nigriventris* had the most frequency among the studied species and followed by *Thaumatomyia notata*, *T. sulcifrons* and *Oscinella frit*. Four of the species *Meromyza nigriventris*, *M. saltatrix*, *Dicraeus raptus* and *Oscinella frit*, are as the pests of cereals and could be find through all the growth season though the species *Thaumatomyia notata* and *T. sulcifrons* are as the predators of grass root aphids so observed at the spring frequently when the mentioned aphids are abundant. The newly recorded species *Platycephala planifrons* and *Dicraeus beschovskii*, each one with one specimen, were the rare species among the studied species due to their hosts (reed) were rare in the studied areas.

Zusammenfassung

Vorliegende Arbeit widmet sich dem Vorkommen der Familie Chloropidae (Diptera) in der iranischen Provinz West-Aserbeidschan, basierend auf Studien in den Jahren 2012-2014. 9 Arten aus 6 Gattungen und 2 Unterfamilien konnten nachgewiesen werden, *Platycephala planifrons* (FABRICIUS, 1798) und *Dicraeus beschovskii* NARTSHUK, 2010 sind Neunachweise für den Iran. Neben einer Artenliste werden auch Fotos zu den Erstnachweisen beigefügt sowie ein Gattungsschlüssel für die behandelten Taxa.

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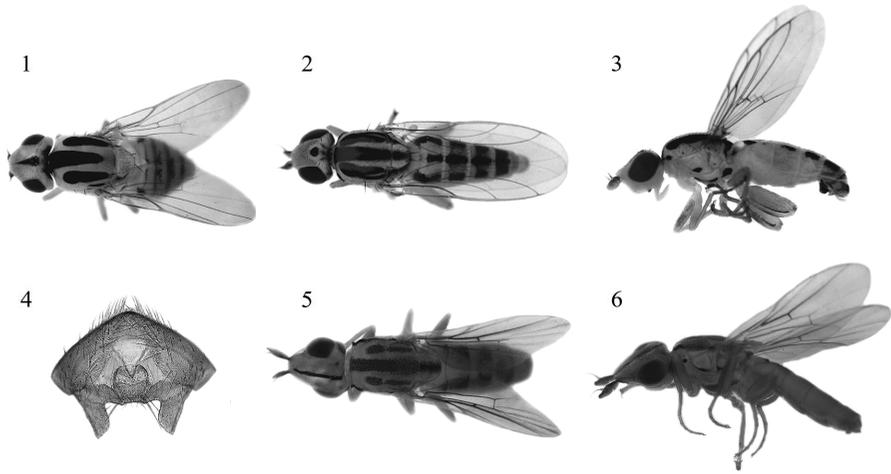


Figure 1-6: (1) *Chlorops figuratus* (Dorsal view); (2) *Meromyza nigriventris* (Dorsal view); (3) *Meromyza saltatrix* (Lateral view); 4-6) *Platycephala planifrons*: (4) Hypopygium, Dorsal view; (5) Dorsal view; (6) Lateral view.

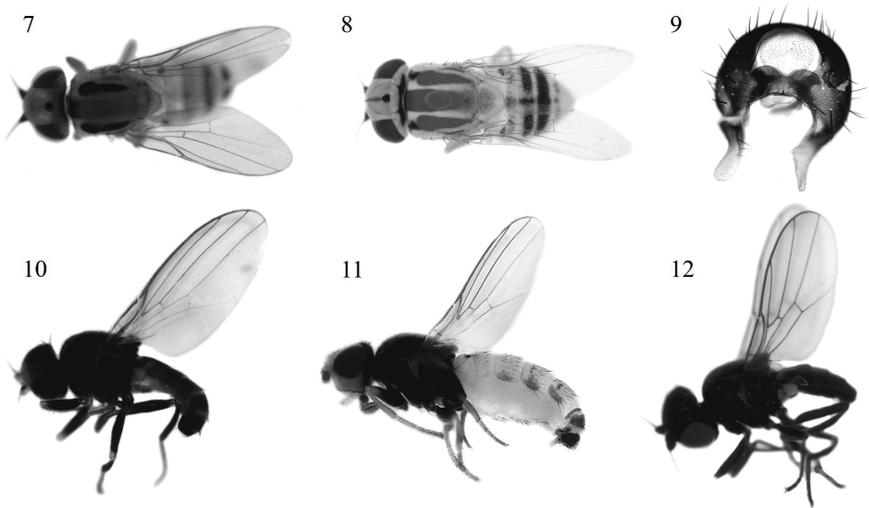


Figure 7-12. (7) *Thaumatomyia notata* (Dorsal view); (8) *Thaumatomyia sulsifrons* (Dorsal view); (9, 10) *Dicraeus beschovskii*: (9) Hypopygium, Dorsal view; (10) Lateral view; (11) *Dicraeus raptus* (Lateral view); (12) *Oscinella frit* (Lateral view).