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The Flies of Family Lauxaniidae (Diptera, Lauxanioidea) in Gilan Province, with New Records for The Iranian Fauna

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ABSTRACT

As a result of our study of the family Lauxaniidae in Gilan province (North Iran), we here report the following seven species new to Iran: *Homoneura notata* (Fallen, 1820), *Meiosimyza platycephala* (Loew, 1847), *Minettia fasciata* (Fallen, 1826), *Minettia longipennis* (Fabricius, 1794), *Minettia tabidiventris* (Rondani, 1877), *Peplomyza litura* (Meigen, 1826) and *Tricholauxania praeusta* (Fallen, 1820). The genus *Peplomyza* is recognized for the first time in this country. Therefore, 31 species in nine genera are now recognized for the Iranian lauxaniid fauna. In addition, we provide diagnosis and color photographs of adult external structures including male genitalia to aid correct identification.

Key words: Diptera, Lauxaniidae, Iran, Gilan, new records.

INTRODUCTION

The Lauxaniidae is one of the large and diverse dipterous families with about 1800 described species (Lee and Han, 2015), but only 24 species that belong to eight genera have been previously recorded in Iran (Majnon Jahromi *et al.*, 2013; Khaghaninia *et al.*, 2014). Most species are found in forests, on shrubs, trees, and leaves. They are less common in dry and wet grasslands (Merz, 2004a). Larvae of lauxaniids are saprophagous, having been found in decaying vegetation such as fallen leaves, straw, rotting wood, and bird nests, but adults may be mostly fungivorous (Miller and Foote 1975; Broadhead 1984). Despite their importance in decomposing plant material, they were insufficiently studied in Iran.

Gilan Province is located in the north of Iran near the Caspian Sea with an area of about 14,000 km^2. This province borders the Republic of Azerbaijan in the North, as well as Russia across the Caspian Sea. Before this study, no information was available on the lauxaniid flies to this region. The aim of the present contribution was to increase the knowledge of this group of flies in Gilan Province of Iran.

MATERIAL AND METHODS

The specimens were collected by standard sweeping net in 2015-2016. The collected specimens were minuten-pinned on their sides. The identified materials

are deposited in Jalal Afashar Zoological Museum, University of Tehran, Karaj, Iran (JAZM) and the private collection of the second author (SMNC). Species were identified according to Shatalkin (2000), Schacht *et al*. (2004) and Merz (2004a). Classification and nomenclature follows Shatalkin (2000).

RESULTS

In this study, 10 species from seven genera were identified from Gilan province. Seven species are newly recorded for the fauna of Iran. The species are listed in alphabetic order.

Calliopum caucasicum Shatalkin, 1996

Distribution: Caucasus, Iran (Papp, 1984; Shatalkin, 2000; Khaghaninia *et al.*, 2014).

Distribution in Iran: East Azerbaijan (Khaghaninia *et al.*, 2014).

Material examined: Rostamabad, 05.06.2015, 1♂ (Mohamadzade leg.) (SMNC); Heyran pass, N: 38°22, E: 48°37, 700m, 15.07.2015, 1♂, 1♀ (JAZM, SMNC); Masal, Rizeh Mandan Village, N: 37°22, E: 49°05, 205 m, 12.08.2015, 1♂ (Karimi leg.) (SMNC).

Homoneura notata (Fallen, 1820)

Distribution: Austria, Bosnia, Bulgaria, Croatia, Czech Republic, France, Germany, Hungary, Romania, Sweden, Switzerland (Papp, 1984; Shatalkin, 2000; Merz, 2004b) (new record for Iran).

Material examined: Astara, Lavandevil, Gisoum, N: 37°40, E: 49°01, -16 m, 21.08.2015, 1♂ (Karimi leg.) (SMNC).

Diagnosis: Small species (3.5-3.8mm);body yellow. Length of aristal rays half as width of third antennal segment. Apical parts of veins Sc and R_1 without brown spots. Two dark brown spots present on r-m and dm-cu crossveins; R_{2+3} with one apical spot; 2-3 brown spots (one apically) present on apical section of R_{4+5} (Figs. 1A, B). Acrostichal setae in four rows. Hind femur of male with posteroventral row of 7-8 long black spine-like setae (more than diameter of tibia) in apical half. Male terminalia as on Figs. 1C, D.

Meiosimyza platycephala (Loew, 1847)

Distribution: Austria, Belgium, Britain, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Norway, Poland, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Netherlands, Ukraine, Yugoslavia (Papp, 1984; Shatalkin, 2000; Merz, 2004b) (new record for Iran).

Material examined: Astara, Heyran pass, N: 38°22, E: 48°37, 700m, 15.07.2015, 3♂♂, 3♀♀ (Karimi leg.) (JAZM, SMNC).

Diagnosis: Body yellow; antenna and palpus completely yellow; wing hyaline. Presutural dorsocentral seta present; acrostichal setae in two rows. One sternopleural seta present (Fig. 1E). Male terminalia as on Figs. 1F, G.

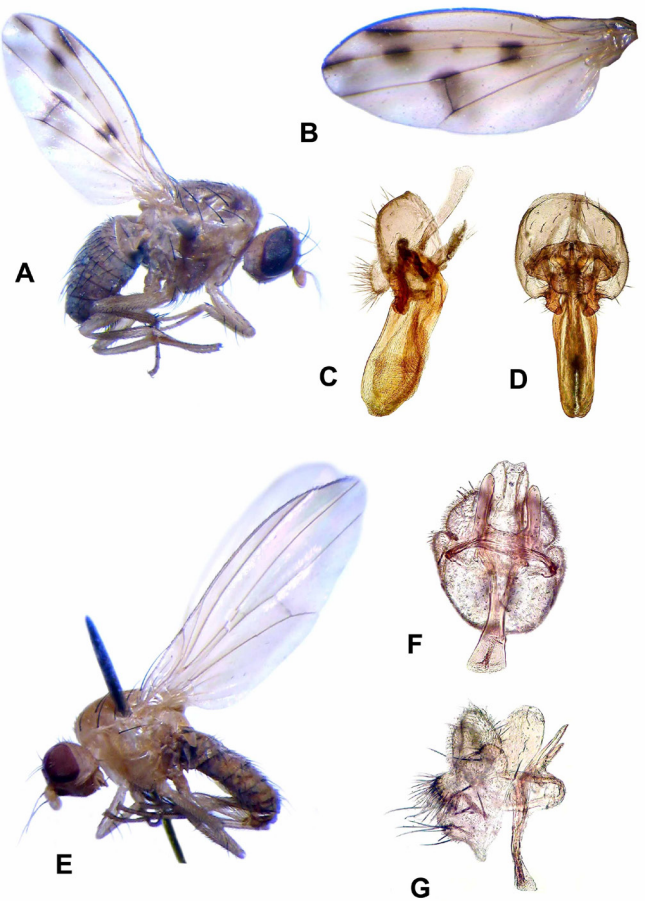

Fig. 1. *Homoneura notata* (Fallen) (A-D) and *Meiosimyza platycephala* (Loew) (E-G), A. Habitus view, right, B. Wing pattern, C. Male terminalia, lateral, D. same, ventral, E. Habitus view, left, F. Male terminalia, ventral, G. Same, lateral.

***Minettia bulgarica* Papp, 1981**

Distribution: Bulgaria, Greece, Ukraine, Iran (Papp, 1984; Papp, 1985; Shatalkin, 2000).

Distribution in Iran: Alburz (Majnon Jahromi *et al.*, 2013), East Azerbaijan (Khaghaninia *et al.*, 2014), Kohkiloyeh and Boyerahmad (Papp, 1985).

Material examined: Masal, Rizeh Mandan Village, N: 37°22, E: 49°05, 205 m, 12.08.2015, 1♂, 2♀♀ (JAZM, SMNC); Sowmee Sara, Tolem, Siahtan village, N: 37°18, E: 49°24, -10 m, 11.08.2015, 2♂♂, 2♀♀ (JAZM, SMNC); Fooman, Roodkhan Castle (Ghaleh Roodkhan), N: 37°06, E: 49°16, 340m, 10.09.2015, 5♀♀ (SMNC); Fooman, Siahchal river, N: 37°13, E: 49°18, 34m, 09.09.2015, 3♂♂, 15♀♀ (Karimi leg.) (JAZM, SMNC).

***Minettia fasciata* (Fallen, 1826)**

Distribution: Austria, Azores, Belgium, Britain, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Malta, Norway, Poland, Romania, Russia, Serbia and Montenegro, Slovakia, Spain, Sweden, Switzerland, Netherlands, Ukraine, North Africa (Morocco), Nearctic (Canada), Near East (Papp, 1984; Shatalkin, 2000; Merz, 2004a; b) (new record for Iran).

Material examined: 5km N Fooman, 21.09.2015, 2♂♂, 5♀♀ (Mohamadzade leg.) (JAZM, SMNC); Fooman, Siahchal river, N: 37°13, E: 49°18, 34m, 09.09.2015, 2♀♀ (SMNC); Masal, Rizeh Mandan Village, N: 37°22, E: 49°05, 205 m, 12.08.2015, 2♂♂, 3♀♀ (JAZM, SMNC); Astara, Lavandevil, Gisoum, N: 37°40, E: 49°01, -1 m, 21.08.2015, 3♂♂, 10♀♀ (SMNC); Astara, Virmoni, Anbaran village, N: 37°40, E: 49°01, 10 m, 21.08.2015, 1♂ (Karimi leg) (SMNC).

Diagnosis: Head yellowish brown, antenna brown, length of aristal rays more than width of third antennal segment. Thorax gray (Fig. 2A) usually with two yellowish brown strips along dorsocentral setae; scutellum yellowish in apical part; lateroventral black spots on scutellum small; acrostichal setae present in 6 rows; presutural dorsocentral seta absent, halter yellow, legs yellowish brown; mid and hind tibiae with one preapical seta. Abdomen yellow with pairs of dull brown spots on fifth abdominal tergite. This species is similar to *M. tabidiventris* and they differ by shape of male genitalia. Surstylus in *M. tabidiventris* is strongly concave, with undulated distal margin (Fig. 2E) which is conspicuously invaginated but in *M. fasciata* surstylus is slightly concave and elongated (Fig. 2B), with an apical toothlike projection at distal posterior margin (Fig. 2C). Medial branch of pregonite with a subapical tooth, and apical tooth usually not prominent (Fig. 2C); postgonite without toothlike projection distally.

***Minettia longipennis* (Fabricius, 1794)**

Distribution: Andorra, Austria, Belgium, Britain, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Norway, Poland, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Netherlands, Ukraine, Mongolia, East Palaearctic, Near East, Nearctic (Papp, 1984; Shatalkin, 2000; Merz, 2004b) (new record for Iran).

Material examined: 5km N Fooman, 21.09.2015, 2♀♀ (Mohamadzade leg.) (SMNC); Fooman, Roodkhan Castle (Ghaleh Roodkhan), N: 37°06, E: 49°16, 340m, 10.09.2015, 2♂♂, 1♀ (JAZM, SMNC) (Karimi leg.).

Diagnosis: Body completely brownish black, antenna brown, length of aristal rays more than width of third antennal segment, palpus black. Acrostichal setae present in 6 rows; presutural dorsocentral seta absent. Wing yellowish; distinctly darkened basally; halter black with yellow stem. Hind tibia without subapical seta. Abdomen black; without spots or bands (Fig. 2G). Surstylus with two lobes, ventral lobes well developed (Fig. 2H).

***Minettia tabidiventris* (Rondani, 1877)**

Distribution: Croatia, Cyprus, Denmark, France, Germany, Greece, Hungary, Israel, Italy, Liechtenstein, Malta, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, Wales (Merz, 2004a) (new record for Iran).

Material examined: Masal, Rizeh Mandan Village, N: 37°22, E: 49°05, 205 m, 12.08.2015, 1♂ (SMNC) (Karimi leg.).

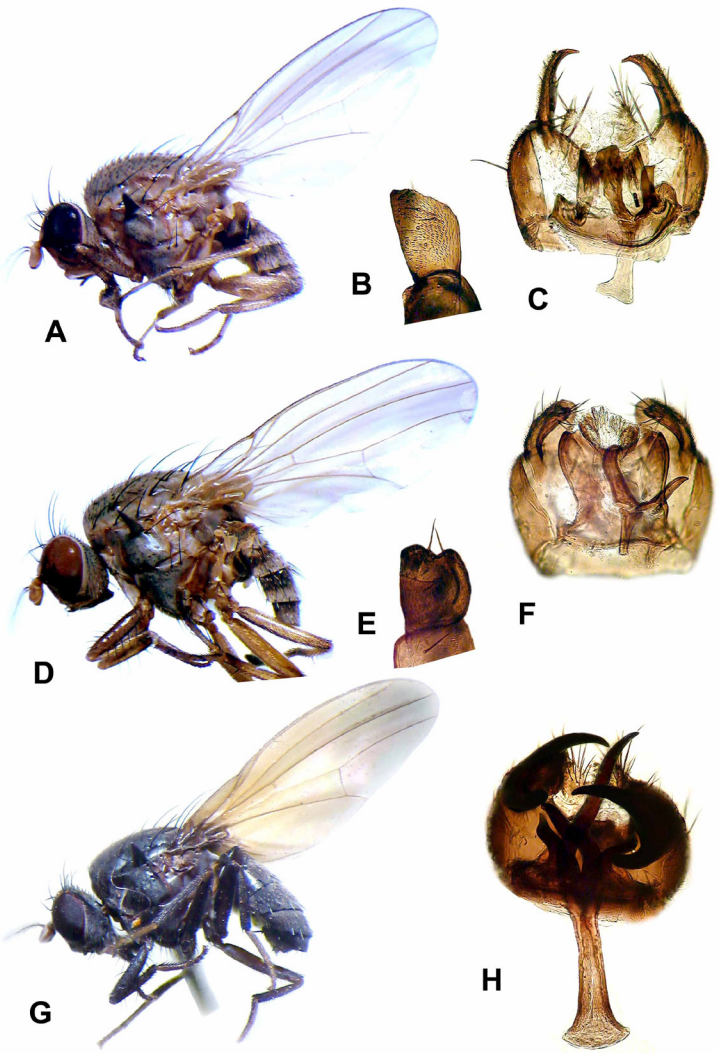

Fig. 2. *Minettia fasciata* (Fallen) (A-C), *Minettia tabidiventris* (Rondani) (D-F) and *Minettia longipennis* (Fabricius) (G-H), A. Habitus view, left, B. Left surstylus, lateral, C. Male terminalia, ventral, D. Habitus view, left, E. Left surstylus, lateral, F. Male terminalia, ventral, G. Habitus view, left, H. Male terminalia, ventral.

Diagnosis: Externally, this species is similar to *M. fasciata* (Figs. 2A, D) and they differ in male genitalia structure. Surstylus in *M. tabidiventris* is strongly concave, with undulated distal margin which is conspicuously invaginated (Figs. 2E, F) but in *M. fasciata* surstylus is slightly concave and elongated, with an apical toothlike projection at distal posterior margin.

***Peplomyza litura* (Meigen, 1826)**

Distribution: Andorra, Austria, Belgium, Britain, Caucasus, Czech Republic, Croatia, France, Germany, Hungary, Ireland, Italy, Liechtenstein, Norway, Poland, Romania, Russia, Serbia, Slovakia, Spain, Switzerland, Netherlands, Ukraine (Papp, 1984; Shatalkin, 2000; Merz, 2004b) (new record for Iran).

Material examined: Astara, Heyran pass, N: 38°22, E: 48°37, 700m, 15.07.2015, 2♂♂, 1♀ (Karimi leg.) (JAZM, SMNC).

Diagnosis: Body brown. Mesonotum with dark longitudinal stripes (Fig. 3B). Lateral part of thorax yellow with brown longitudinal stripes. Presutural dorsocentral seta present. Wing with dark longitudinal bands (Figs. 3A, C). Vein R_{4+5} setose on basal part.

***Sapromyza talyshensis* Shatalkin, 1998**

Distribution: Azerbaijan and Iran (Papp, 1984; Shatalkin, 1998)

Distribution in Iran: Golestan (Shatalkin, 1998).

Material examined: Talesh, Havigh region, Rik valley, N: 37°47, E: 48°54, 43 m, 20.08.2015, 2♂♂ (JAZM, SMNC); Masal, Rizeh Mandan Village, N: 37°22, E: 49°05, 205 m, 12.08.2015, 1♂ (Karimi leg.) (SMNC).

***Tricholauxania praeusta* (Fallén, 1820)**

Distribution: Austria, Belgium, Belarus, Czech Republic, Denmark, Bulgaria, France, Germany, Italy, Finland, Sweden, Romania, Ukraine, (Papp, 1984; Merz, 2004b) (new record for Iran).

Material examined: Astara, Bibi Yanlo farest park, N: 38°26, E: 48°48, 25m, 19.08.2015, 10♂, 2♀♀ (Karimi leg.) (JAZM, SMNC).

Diagnosis: Body completely yellow, presutural dorsocentral seta present. Wing with R_{2+3} setose ventrally. This species simply differentiated with another species of the genus in the Palaearctic region, *T. claripennis*, by wing with dull brown areas along dm-cu and darkening in apical part of longitudinal veins, but *T. claripennis* only have brown area along dm-cu crossvein (Fig. 3D). In male, hind tibia with apicoventral patch of short, dense, black setae (in *T. claripennis*, hind tibia contains ventroapical groove with thick spinules along margin). Male genitalia as in Figs. 3E, F.

REMARKS

Before this study, no Lauxaniidae species had been recorded from Gilan province but in the present study 10 species were collected from this province; of them, seven species were recorded for the first time for Iran increasing the number of known Iranian lauxaniidae species from 24 to 31. All of the collected species are new records to this province. The current study is only a small part of investigations aiming at completing knowledge on faunal diversity of the family Lauxaniidae in Iran. Further taxonomic investigations are necessary to increase the knowledge of diversity and applicability of this group of insects in other parts of Iran.

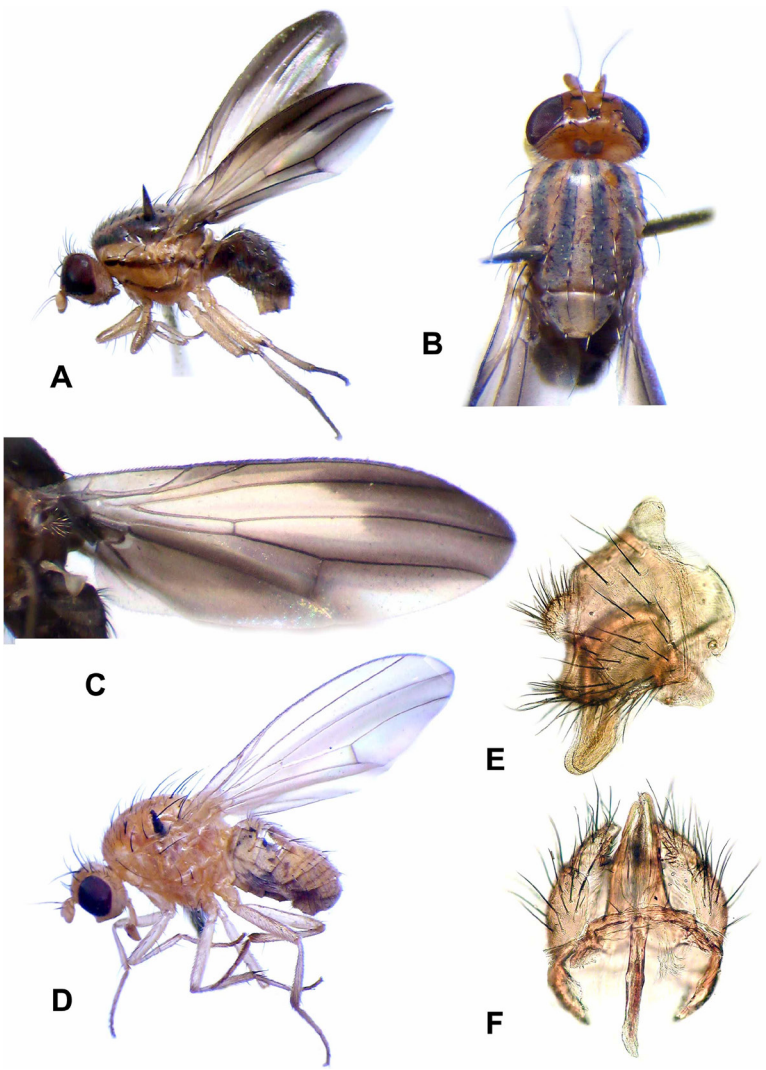

Fig. 3. *Peplomyza litura* (Meigen) (A-C) and *Tricholauxunia praeusta* (Fallen) (D-F), A. Habitus view, left, B. Mesonotum, C. Wing pattern, D. Habitus view, left, E. Male terminalia, lateral, F. same, ventral.

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