

On the bee fly (Diptera: Bombyliidae) fauna from West Azarbaijan Province of Iran

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Abstract. The paper represents the first contribution to the knowledge of the bee fly fauna from the West Azarbaijan province-Iran. During a one-year survey (2006) a total of 53 Bombyliid species dependent 26 genera were identified. Of these, eleven species including *Spogostylum isis* (Meigen, 1820), *Spogostylum tripunctatum* (Wiedemann, 1820), *Cononedys stenura* (Loew, 1871), *Exoprosopa dispar* (Loew, 1869), *Exhyalanthrax macrops* (Portschinski, 1887), *Hemipenthes robusta* (Zaitzev, 1966), *Villa hottentotta* (Linnaeus, 1758), *Villa niphobleta* (Loew, 1869), *Legnotomyia trichorrhoea* (Loew, 1855), *Cytherea fenestrulata* (Loew, 1873), *Lomatia shelkovnikovii* (Paramonov, 1924) are reported as new records for Iranian bee fly (Diptera: Bombyliidae) fauna.

Key words: Diptera, Bombyliidae, fauna, new records, West Azarbaijan, Iran.

Introduction

The family Bombyliidae with almost 4600 described species is one of the largest families of Brachyceran Diptera throughout the world (Evenhuis & Greathead 1999, 2003). Bee flies occur in a variety of habitats and are fairly common insects in the arid and semiarid areas. The family has a high percentage of the fly diversity in the desert regions of the world. The adults of most species are very fast and nimble fliers (Hull 1973, Evenhuis & Greathead 1999). Bombyliids are primarily parasitic or predacious on the immature stage of other insects including Lepidoptera, Hymenoptera (solitary bees, wasps and sawflies), Coleoptera, Diptera, Neuroptera, locusts and grasshoppers in their larval stages (Yeates & Greathead 1997). Additionally, some bee fly species are pollinators of various wild and cultivated plant species (Özbek 2008).

The information on the bombyliid's species of Iran is rare and fragmentary. The first data have been reported by Austin (1973). Engel (1932-37) and Austin (1973) made contributions on bee fly fauna. As a native scientist, Abbassian-Lintezen (1965, 1966a, 1966b, 1968) made important studies. She described 8 new species and 2 new subspecies and reported the occurrence of 42 species of the family in Iran. The catalogue of Evenhuis & Greathead (2003) constitutes the distribution of a total of 101 species of bee flies in Iran. Recently, Greathead & Karimpour (2006) and Gharali et al. (2010) described one species of *Villa* Liow and 2 species of *Apolysis* Loew, respectively. Sakenin et al. (2008) and Ghahhary et al. (2009) listed species that are natural enemies in the rice fields. More recently, Havaskary et al. (2011a) presented 58 species in 26 genera and six subfamilies from different parts of Iran, also Havaskary et al. (2011b) published 49 species dependent 23 genera from Arasbaran and vicinity from the North West of Iran. However, the fauna of bee flies has not been comprehensively studied in West Azarbaijan province, and only a few species have been listed by Havaskary et al. (2011a). The aim of the present study is to contribute to the knowledge of bee fly fauna of Iran.

Material and methods

The materials for this study were collected from various habitats in different localities of West Azarbaijan province

(Fig. 1). Several localities were visited in the central and northern parts of the province during the year 2006. Sampling of adult bee flies was performed applying entomological nets. Collected specimens were pinned and labeled according to the current taxonomic rules and regulations. Geographical coordinates, altitude (meter above sea level) and collection date for each sample was recorded. Distribution of each species was taken from Evenhuis & Greathead (1999, 2003). Voucher specimens are deposited in Natural History Museum of Urmia University and some specimens are housed in Imperial College of London.



Figure 1. Map of West Azarbaijan showing the collecting places. (a- Urmia, b- Khoy and c- Maku regions).

The identifications of bee fly specimens were made by late Dr. David John Greathead (Imperial College of London, UK).

Results

During this study, 213 specimens were collected in the West Azarbaijan Province. Their determination led to the establishment of 52 species, pertaining to 26 genera in 5 subfamilies Anthracinae, Bombyliinae, Cythereinae, Lomatiinae and Toxophorinae. Eleven species were new records for the Iranian bee fly fauna.

As a result of the study, the collection of bee fly species in the West Azarbaijan province prepared the identification of 213 specimens. Their determination led to the establishment of 52 species, pertaining to 26 genera in 5 subfamilies, containing Anthracinae, Bombyliinae, Cythereinae, Lomatiinae and Toxophorinae. Eleven species were new records for the Iranian bee fly fauna.

Subfamily Anthracinae Latreille

Tribe Anthracini Latreille

Genus *Anthrax* Scopoli, 1763

Anthrax anthrax (Schrank, 1781)

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♂; Urmia (vicinity of Tāzehkand-e Qāterchī village, 37°39'N, 44°58'E, 1335 m. s. l.) 4.VI.2006, 1♂.

Geographical distribution: General distribution in Palaearctic region.

Genus *Spogostylum* Macquart, 1840

Spogostylum candidum (Sack, 1909)

Material examined: Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 11.VII.2006, 1♂, 23.VI.2006, 5♂♂2♀♀.

Geographical distribution: Oriental: Pakistan. Palaearctic: Egypt, Iran, Turkey, United Arab Emirates.

Comments: The male genitalia of this species was depicted by Theodor (1983).

Spogostylum isis (Meigen, 1820)

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 2♂♂1♀; Maku (39°16'N, 44°28'E, 1417 m. s. l.), 30.VI.2006, 1♂; Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 23.VI.2006, 1♂1♀; 11.VII.2006, 3♂♂2♀♀.

Geographical distribution: Afrotropical: Mali. Palaearctic: Algeria, Armenia, Austria, Azerbaijan, Belgium, Croatia, Cyprus, Egypt, France, Greece, Gruzia, Israel, Italy, Kazakhstan, Kyrgyz Republic, Libya, Macedonia, Malta, Morocco, Portugal, Saudi Arabia, Spain, Syria, Tajikistan, Tunisia, Turkey, Turkmenistan, Uzbekistan, former Yugoslavia.

Comments: New record for Iran.

Spogostylum tripunctatum (Wiedemann, 1820)

Material examined: Khoy (vicinity of Pīrkandī village, N38°43'-E45°06', 1006 m) 15.VI.2006, 2♀♀.

Geographical distribution: Palaearctic: Afghanistan, Albania, Algeria, Armenia, Austria, Azerbaijan, Bosnia-Herzegovina, Bulgaria, Croatia, Egypt, France, Greece (in-

cluding Ithaca), Gruzia, Israel, Italy, Kyrgyz Republic, Libya, Macedonia, Malta, Moldova, Morocco, Russia, Spain, Switzerland, Syria, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.

Comments: New Record for Iran.

Tribe Aphobantini Becker

Genus *Cononedys* Hermann, 1907

Cononedys stenura (Loew, 1871)

Material examined: Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 23.VI.2006, 1♂.

Geographical distribution: Oriental: Pakistan. Palaearctic: Israel, Tajikistan, Turkmenistan, Uzbekistan.

Comments: New Record for Iran, although the differences between *C. stenura* and *C. armenicus* Paramonov are small but the Iranian specimen fits *C. stenura* best.

Tribe Exoprosopini Becker

Genus *Exoprosopa* Macquart, 1840

Exoprosopa cleomene Egger, 1859

Material examined: Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 23.VI.2006, 1♂1♀.

Geographical distribution: widely distributed in Palaearctic region and Iran (Havaskary et al. 2011).

Exoprosopa dispar Loew, 1869

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♂.

Geographical distribution: widely distributed in Palaearctic.

Comments: New Record for Iran; in my specimen the wing pattern is unusually pale.

Exoprosopa minois Loew, 1869

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 20.VI.2006, 2♂♂; Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 11.VII.2006, 1♂.

Geographical distribution: Palaearctic: widespread.

Comments: Iranian specimens are close to *E. minoides* in Paramonov (1928), also close to *E. zarudneyi* but these species have pale not black hair on fronts. A Genitalia of a male specimen is identical with that of a specimen of *E. minois* from Lesvos but epiphallus is rounded at apex and not angular as in the illustration for Transcaucasus in Zaitzev (1966).

Exoprosopa sp.

Material examined: Urmia (vicinity of Tāzehkand-e Qāterchī village, 37°39'N, 44°58'E, 1335 m. s. l.) 12.V.2006, 1♂.

Geographical distribution: Cosmopolitan genus.

Genus *Heteralonia* Rondani, 1863

Heteralonia (Acrodisca) suffusa Klug, 1832

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 2♂♂, 2♀♀.

Geographical distribution: Afrotropical: Kenya, Somalia. Palaearctic: Central and Southern zones.

Heteralonia (Homolonia) megerlei (Meigen, 1820)

Material examined: Khoy (vicinity of Pīrkandī village, N38°43'-E45°06', 1006 m. s. l.) 15.VI.2006, 1♀.

Geographical distribution: Afrotropical: Chad, Gambia, Ghana, Mauritania, Niger, Nigeria, Senegal, Sudan, Yemen.

Oriental: Pakistan. **Palaeartic:** Widespread.

***Heteralonia (Zygodipla) bagdadensis* Macquart, 1840**

Material examined: Urmia (vicinity of Tāzehkand-e Qāterchī village, 37°39'N, 44°58'E, 1335 m. s. l.), 10.VI.2006, 1♂.

Geographical distribution: **Palaeartic:** Armenia, Azerbaijan, Egypt, Iran, Iraq, Israel (including West Bank), Mongolia, Oman, Saudi Arabia, United Arab Emirates.

Tribe Prorostomatini Hull

Genus *Stomylomyia* Bigot, 1887

***Stomylomyia europaea* (Loew, 1869)**

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♀.

Geographical distribution: **Palaeartic:** Afghanistan, Albania, Armenia, Azerbaijan, Egypt, France, Greece (including Corfu, Rhodes), Gruzia, Hungary, Iran, Israel, Italy, Macedonia, Moldova, Romania, Russia (SET), Turkey, Ukraine, former Yugoslavia.

Comments: The female Genitalia of Iranian specimens fit well with the spermathecae as illustrated by Theodor (1983) for *S. europaea* (Loew).

Tribe Vilini Hull

Genus *Caecanthrax* Greathead, 1980

***Caecanthrax arabicus* Macquart, 1840**

Material examined: Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 11.VII.2006, 1♂.

Geographical distribution: **Oriental:** Pakistan. **Palaeartic:** Afghanistan, Armenia, Azerbaijan, France, Greece (including Rhodes), Gruzia, Iran, Italy, Jordan, Kyrgyz Republic, Saudi Arabia, Tajikistan, Turkey, Turkmenistan, United Arab Emirates, Uzbekistan, former Yugoslavia.

Genus *Exhyalanthrax* Becker, 1916

***Exhyalanthrax afer* (Fabricius, 1794)**

Material examined: Khoy (vicinity of Pirkandī village, N38°43' - E45°06', 1006 m. s. l.) 15.VI.2006, 1♀.

Geographical distribution: **Afrotropical:** Chad, Eritrea, Ghana, Kenya and Yemen. **Oriental:** Pakistan. **Palaeartic:** Widespread.

***Exhyalanthrax macrops* (Portschinski, 1887)**

Material examined: Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 21.VI.2006, 1♂

Geographical distribution: **Palaeartic:** Armenia, Azerbaijan, Gruzia, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan.

Comments: New Record for Iran fauna.

***Exhyalanthrax muscarius* (Pallas, 1818)**

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♀.

Geographical distribution: **Oriental:** (Pakistan) **Palaeartic:** Widespread.

Comments: front scales in my specimens are only yellowish not brassy runs to *Exhyalanthrax muscarinus*.

Genus *Hemipenthes* Loew, 1869

***Hemipenthes exoprosopoides* Paramonov, 1928**

Material examined: Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 11.VII.2006, 2♂♂, 1♀.

Geographical distribution: **Palaeartic:** Armenia, Azerbaijan, China (Sichuan), Iran, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan.

Comments: *Hemipenthes exoprosopoides* are closely related to *H. velutinus* but in the former collar it is pale yellow, the white scale band on t4, t7 white, narrowly interrupted and the hair at sides of abdomen are short.

***Hemipenthes morio* (Linnaeus, 1758)**

Material examined: Urmia (vicinity of Tāzehkand-e Qāterchī village, 37°39'N, 44°58'E, 1335 m. s. l.) 12.V.2006, 1♀.

Geographical distribution: Generally in Holarctic region.

***Hemipenthes robusta* Zaitzev, 1966**

Material examined: Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 2.VI.2006, 1♀.

Geographical distribution: **Palaeartic:** Armenia, Azerbaijan, China (Beijing, Shaanxi), Gruzia, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan.

Comments: New Record for Iran; *Hemipenthes robusta* are closely related to *H. velutinus*, but in the former collar is brighter golden yellow, broad white band on t4 and hair at sides of abdomen are relatively long.

***Hemipenthes velutina* (Meigen, 1820)**

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♂♂; Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 25.V.2006, 1♂.

Geographical distribution: **Oriental:** Pakistan. **Palaeartic:** Many countries.

Genus *Pachyanthrax* François, 1964

***Pachyanthrax telamon* (Loew, 1869)**

Material examined: Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 7.VI.2006, 1♂.

Geographical distribution: **Palaeartic:** Armenia, Azerbaijan, Cyprus, France, Greece (including Kos), Gruzia, Iran, Israel (including Gaza Strip, West Bank), Italy, Kyrgyz Republic, Syria, Tajikistan, Turkey, Turkmenistan, Uzbekistan, former Yugoslavia.

***Pachyanthrax* sp.**

Material examined: Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 11.VII.2006, 1♀.

Geographical distribution: The genus is distributed in Afrotropical, Oriental and Palaeartic region.

Comments: In my specimen, the above and lower parts of the head are black. Scutellum, sides of the abdominal terga and sterna are yellow. Legs yellow, all hairs and scales are golden, except black hairs on scape and costal comb and bristles on legs. First flagellomere is elongate but second is short. Wing is hyaline, except costal cell and third submarginal cell which are pale yellow.

Genus *Thyridanthrax* Osten Sacken, 1886

***Thyridanthrax elegans* (Wiedemann, 1818)**

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 3♂♂, 2♀♀; Khoy (vicinity of Pirkandī village, N38°43' - E45°06', 1006 m. s. l.) 15.VI.2006, 8♀♀; Urmia (vicinity of Tāzehkand-e Qāterchī village, 37°39'N, 44°58'E, 1335 m. s. l.) 27.V.2006, 1♂; 5.VI.2006, 1♀; 7.VI.2006, 2♂♂; Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 7.VI.2006, 1♀; 23.VI.2006, 2♂♂.

Geographical distribution: Widespread in Palaeartic region.

***Thyridanthrax incanus* (Klug, 1832)**

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 11.VII.2006, 1♂.

Geographical distribution: Oriental: Pakistan. Palaeartic: Afghanistan, Algeria, Armenia, Azerbaijan, Cyprus, Egypt, France, Greece, Gruzia, Iran, Israel, Italy (including Sicily), Lebanon, Libya, Macedonia, Morocco, Syria, Tunisia, Turkey, Turkmenistan, former Yugoslavia.

***Thyridanthrax perspicillaris* (Loew, 1832)**

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 29.V.2006, 3♀♀; 23.VI.2006, 1♂, 2♀♀; 11.VII.2006, 2♂♂, 1♀; Maku (39°16'N, 44°28'E, 1417 m. s. l.), 30.VI.2006, 1♀.

Geographical distribution: Oriental: Pakistan. Palaeartic: Afghanistan, Algeria, Armenia, Azerbaijan, Cyprus, Egypt, France, Greece, Gruzia, Iran, Israel, Italy (including Sicily), Lebanon, Libya, Macedonia, Morocco, Syria, Tunisia, Turkey, Turkmenistan, former Yugoslavia.

***Thyridanthrax polyphemus* (Wiedemann, 1819)**

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 23.VI.2006, 1♂; 11.VII.2006, 1♂, 2♀♀.

Geographical distribution: Palaeartic: Armenia, Azerbaijan, France, Greece (including Zakynthos), Gruzia, Iran, Israel (including West Bank), Italy, Libya, Malta, Morocco, Portugal, Spain, Syria, Tunisia, Turkey, Turkmenistan, Uzbekistan, former Yugoslavia.

Genus *Veribubo* Evenhuis, 1978***Veribubo albinus* (Becker, 1913)**

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♀.

Geographical distribution: Palaeartic: Armenia, Azerbaijan, Gruzia, Iran.

Genus *Villa* Lioy, 1864***Villa hottentotta* (Linnaeus, 1758)**

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♀; Khoy (vicinity of Pirkandî village, N38° 43'-E45° 06', 1006 m. s. l.) 15.VI.2006, 1♀; Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 23.VI.2006, 1♂.

Geographical distribution: Widespread in Palaeartic region.

Comments: New Record for Iran.

***Villa ixion* (Fabricius, 1794)**

Material examined: Urmia (vicinity of Tâzehkand-e Qâterchî village, 37°39'N, 44°58'E, 1335 m. s. l.) 21.V.2006, 1♂; Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 7.VI.2006, 1♀; 23.VI.2006, 1♀.

Geographical distribution: Palaeartic: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Egypt, France, Greece (including Corfu, Rhodes), Hungary, Iran, Italy, Libya, Macedonia, Moldova, Morocco, Poland, Romania, Russia (SET), Slovakia, Slovenia, Spain, Switzerland, Ukraine, former Yugoslavia.

Comments: My specimens don't have silvery scales on terminal abdominal terga. *V. ixion* was recorded from Turkey for the first time by Dils and Ozbek (2006). They noted that their records extended the distribution area of this spe-

cies considerably eastward. Present study extended the distribution of this species much further to east.

***Villa cf. ixion* (Fabricius, 1794)**

Material examined: Urmia (vicinity of Tâzehkand-e Qâterchî village, 37°39'N, 44°58'E, 1335 m. s. l.) 7.VI.2006, 1♀.

***Villa niphobleta* (Loew, 1869)**

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 2♀♀; Urmia (vicinity of Tâzehkand-e Qâterchî village, 37°39'N, 44°58'E, 1335 m. s. l.) 5.VI.2006, 1♂; 10.VI.2006, 1♂; Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 2.VI.2006, 1♀; 23.VI.2006, 2♀♀; 11.VII.2006, 1♂, 1♀.

Geographical distribution: Palaeartic: Afghanistan, Algeria, Armenia, Azerbaijan, Bulgaria, Cyprus, France, Greece, Gruzia, Italy (including Sardinia, Sicily), Kyrgyz Republic, Morocco, Romania, Russia (ES, WS), Spain, Tajikistan, Tunisia, Turkey, Turkmenia, Uzbekistan, former Yugoslavia.

Comments: New Record for Iran.

Tribe Xeramoebini Hull**Genus *Petrorossia* Bezzi, 1908*****Petrorossia* sp.**

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♀.

Geographical distribution: Cosmopolitan genus.

Comments: The specimen has pale hairs and bristles. Legs are yellow.

Genus *Xeramoeba* Hesse, 1956***Xeramoeba sabulonis* (Becker, 1906)**

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 2♀♀; Maku (39°16'N, 44°28'E, 1417 m. s. l.), 30.VI.2006, 1♀.

Geographical distribution: Afrotropical: Sudan. Palaeartic: Algeria, Egypt, Greece, Israel, Macedonia, Tunisia, Turkey, Former Yugoslavia and Iran (Havaskary et al. 2011a).

Subfamily Toxophorinae Schiner**Tribe Gerontini Hesse****Genus *Geron* Meigen*****Geron krymensis* Paramonov, 1929**

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♂.

Geographical distribution: Widespread in Palaeartic region.

***Geron michaili* Zaitzev, 1927**

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♂.

Geographical distribution: Palaeartic: Armenia, Egypt, Mongolia and Iran (Havaskary et al. 2011a).

Subfamily Bombyliinae Latreille**Tribe Bombyliini Latreille****Genus *Bombylilla* Greathead*****Bombylilla atra* Scopoli, 1763**

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 21.V.2006, 1♂;

25.V.2006, 3♂♂, 2♀♀; 27.V.2006, 1♀; 29.V.2006, 1♂; 2.vi.2006, 2♂♂, 1♀.

Geographical distribution: Widespread in Palaeartic region.

Genus *Bombylisoma* Rondani

Bombylisoma flavibarbum Loew, 1855

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 4.VI.2006, 1♂; 10.VI.2006, 1♀.

Geographical distribution: Palaeartic: Armenia, Austria, Azerbaijan, Bosnia Hercegovina, Croatia, Egypt, Greece (including Lesbos, Rhodes), Gruzia, Iran, Israel, Italy, Jordan, Macedonia, Moldova, Russia (SET), Slovenia, Spain, Syria, Tunisia, Turkey, Ukraine, former Yugoslavia.

Bombylisoma sp.

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 23.VI.2006, 1♀.

Comments: The specimen runs to *B. flavibarbum* but it is much larger (9mm). Beneath the abdomen hairs are pale yellow with shiny pale yellow scales. It does not have black bristles.

Genus *Bombylius* Linnaeus

Bombylius cinerascens Mikan, 1796

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 25.V.2006, 4♂♂, 3♀♀; 2.vi.2006, 1♀.

Geographical distribution: Palaeartic region. This species recently has been recorded from Iran (Havaskary et al. 2011a).

Bombylius medius Linnaeus, 1758

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 25.V.2006, 1♀.

Geographical distribution: Palaeartic.

Bombylius posticus Fabricius, 1805 (=*vulpinus* Wiedemann, 1820)

Material examined: Urmia (vicinity of Tâzehkand-e Qâterchî village, 37°39'N, 44°58'E, 1335 m), 10.VI.2006, 1♀; Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 23.VI.2006, 1♂.

Comments: The male has entirely pale legs.

Geographical distribution: Palaeartic.

Genus *Systoechus* Loew

Systoechus ctenopterus (Mikan, 1796)

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 25.V.2006, 1♀; 27.V.2006, 1♀; 7.VI.2006, 4♂♂, 1♀; 23.vi.2006, 1♀.

Geographical distribution: Palaeartic.

Tribe Conophorini Becker

Genus *Legnotomyia* Bezzi

Legnotomyia trichorrhoea Loew, 1855

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 25.V.2006, 2♂♂.

Geographical distribution: Palaeartic: Greece, Iraq, Israel (include West Bank), Italy, Macedonia, Syria and former Yugoslavia. This species has been recently recorded from Turkey (Dils & Ozbek, 2006).

Comments: New Record for Iran.

Subfamily Cythereinae Becker

Genus *Amictus* Wiedemann

Amictus validus Loew, 1869

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 23.VI.2006, 1♀; 11.VII.2006, 1♀.

Geographical distribution: Palaeartic: Bulgaria, Cyprus, Greece (Lesbos), Iran, Jordan, Romania, Russia south and Turkey.

Genus *Callostoma* Macquart

Callostoma persicum Paramonov, 1929

Material examined: Khoy (38°42'N, 44°54'E, 1472 m) 29.VI.2006, 1♂; Maku (39°16'N, 44°28'E, 1417 m. s. l.), 30.VI.2006, 1♀; Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 23.VI.2006, 1♀.

Geographical distribution: Palaeartic: Iran.

Callostoma sp.

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 21.V.2006, 1♂.

Geographical distribution: The genus distribution is restricted to some countries in Afrotropical, Oriental and Palaeartic region.

Comments: The specimen is like *Cytherea obscura* in appearance but vestiture is white below and brown above without contrasting black and white bands on abdominal terga, wing pattern is light brown.

Genus *Chalcochiton* Loew

Chalcochiton pallasii (Loew, 1856)

Material examined: Urmia (vicinity of Tâzehkand-e Qâterchî village, 37°39'N, 44°58'E, 1335 m. s. l.), 4.VI.2006, 3♀♀; 5.VI.2006, 1♂; 7.VI.2006, 2♂♂; 10.VI.2006, 2♂♂, 2♀♀.

Geographical distribution: Palaeartic: Armenia, Azerbaijan, Bulgaria, Greece (including Lesbos), Gruzia, Iran, Italy, Kyrgyz Republic, Macedonia, Moldova, Morocco, Poland, Romania, Russia (SET), Slovenia, Syria, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, Turkey.

Genus *Cytherea* Fabricius

Cytherea fenestrulata (Loew, 1873)

Material examined: Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 21.V.2006, 1♀; 29.V.2006, 1♀.

Geographical distribution: Palaeartic: Armenia, Azerbaijan, Kazakhstan, Tajikistan, Uzbekistan. Recently recorded from Turkey (Dils & Ozbek, 2006).

Comments: New Record for Iran.

Cytherea obscura (Fabricius, 1794)

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♀; Urmia (Shohada valley, vicinity of Shürü Kandî village, 37°18'N, 45°07'E, 1420 m. s. l.) 23.VI.2006, 1♀.

Geographical distribution: Palaeartic: Albania, Armenia, Austria, Azerbaijan, Bosnia Hercegovina, Bulgaria, Croatia, Czech Republic, France, Greece, Gruzia, Iran, Israel (including West Bank), Italy, Lebanon, Macedonia, Moldova, Morocco, Portugal, Russia (SET), Slovakia, Slovenia, Spain, Syria, Tajikistan, Turkey, Turkmenistan, Ukraine, former Yugoslavia.

Subfamily Lomatiinae Schiner

Tribe Lomatiini Schiner

Genus *Lomatia* Meigen

Lomatia belzebul (Fabricius, 1794)

Material examined: Urmia (vicinity of Tāzehkand-e Qāterchī village, 37°39'N, 44°58'E, 1335 m. s. l.), 10.V.2006, 1♂; 11.V.2006, 1♂, 2♀♀; 12.V.2006, 3♂♂, 2♀♀; 21.V.2006, 3♂♂; 27.V.2006, 1♂, 1♀; Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 2.VI.2006, 2♂♂, 1♀; 7.VI.2006, 1♂, 4♀♀; 23.VI.2006, 1♀.

Geographical distribution: **Palaeartic:** Algeria, Armenia, Azerbaijan, Bosnia-Herzegovina, Croatia, France (including Corsica), Greece, Gruzia, Hungary, Iran, Italy (including Sicily), Libya, Macedonia, Moldova, Morocco, Poland, Romania, Russia (SET), Slovakia, Slovenia, Spain, Syria, Tunisia, Turkey, Turkmenistan, Ukraine, former Yugoslavia.

Lomatia persica Paramonov, 1924

Material examined: Urmia (vicinity of Tāzehkand-e Qāterchī village, 37°39'N, 44°58'E, 1335 m. s. l.), 11.V.2006, 1♂, 1♀; 12.V.2006, 2♂♂, 1♀; 21.V.2006, 1♀; 27.V.2006, 2♂♂, 1♀; Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 2.VI.2006, 1♀; Urmia (vicinity of Tāzehkand-e Qāterchī village, 37°39'N, 44°58'E, 1335 m. s. l.), 5.VI.2006, 1♂; Urmia (Shohada valley, vicinity of Shīrū Kandī village, 37°18'N, 45°07'E, 1420 m. s. l.) 2.VI.2006, 1♀; 7.VI.2006, 2♂♂.

Geographical distribution: **Palaeartic:** Armenia, Azerbaijan, Iran. Recently recorded from Turkey (Dils & Ozbek 2006).

Lomatia shelkovnikovi Paramonov, 1924

Material examined: Khoy (38°42'N, 44°54'E, 1472 m. s. l.) 29.VI.2006, 1♀.

Geographical distribution: **Palaeartic:** Armenia, Azerbaijan.

Comments: New Record for Iran.

Discussion

The information about the Bombyliidae of Iran is limited. During the one year of survey of the Bombyliidae of the Northwest of Iran, 53 species were collected. The genera and their number of species are: *Anthrax* Scopoli (1), *Spogostylum* Macquart (3), *Cononedys* Herman (1), *Exoprospa* Macquart (4), *Heteralonia* Rondani (3), *Stomylomia* Bigot (1), *Caecanthrax* Greathead (1), *Exhyalanthrax* Becker (3), *Hemipenthes* Loew (4), *Pachyanthrax* François (2), *Thyridanthrax* Osten Sacken (4), *Veribubo* Evenhuis (1), *Villa* Lioy (4), *Petrorossia* Bezzi (1), *Xeramoeba* Hesse (1), *Geron* Meigen (2), *Bombylilla* Greathead (1), *Bombylisoma* Rondani (2), *Bombylius* Linnaeus (3), *Systoechus* Loew (1), *Legnotomyia* Bezzi (1), *Amictus* Wiedemann (1), *Callostoma* Macquart (2), *Chalcochiton* Loew (1), *Cytherea* Fabricius (2), *Lomatia* Meigen (3). Six species could not be identified accurately at species level. Primary results of this study revealed a high diversity of the bee flies at the West Azarbaijan province. The subfamilies Anthracinae with 49.8% and Toxophorinae with 0.94% of the total specimens collected were high and respectively low in their numbers of

species. No doubts, further sampling will raise the number of known bee fly species in this area.

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References

- Abbassian-Lintzen, R. (1965): Bombyliidae (Diptera) of Iran. I. Species of the genus *Bombylius* Loew. *Annals and Magazine of Natural History* 13(8): 533-47.
- Abbassian-Lintzen, R. (1966a): Bombyliidae (Diptera) of Iran. II. *Pteraulax oldroydi* new species. *Annals and Magazine of Natural History* 13(9): 321-24.
- Abbassian-Lintzen, R. (1966b): Bombyliidae (Diptera) of Iran. III. Some species of the genera *Dischistus* Loew, *Systoechus* Loew and *Anastoechus* Osten Sacken. *Annals and Magazine of Natural History* 13(9): 325-32.
- Abbassian-Lintzen, R. (1968): Bombyliidae (Diptera) of Iran. IV. Species of the subfamily Cythereinae. *Journal of Natural History* 2: 231-38.
- Austin, E.E. (1937): Bombyliidae of Palestine. 188 pp. London, British Museum (Natural History).
- Dils, J., Ozbek, H. (2006): Contribution to the knowledge of the Bombyliidae of Turkey (Diptera). *Linzer Biologische Beiträge* 38 (1): 455-505.
- Engel, E.O. (1932-1937): Bombyliidae. pp.619. In: Lindner (ed), *Die Fliegen der palaearktischen Region*. Stuttgart, Schweizerbart'sche Verlagsbuchhandlung.
- Evenhuis, N.L., Greathead, D.J. (1999): World Catalog of Bee Flies (Diptera: Bombyliidae). Leiden: Backhuys Publishers, 756pp.
- Evenhuis, N.L., Greathead, D.J. (2003): World Catalog of Bee Flies (Diptera: Bombyliidae): Corrigenda and Addenda. *Zootaxa* 300: 64pp.
- Ghahari, H., Havaskary, M., Tabari, M., Ostovan, H., Sakenin, H., Satar, A. (2009): An annotated catalogue of Orthoptera (Insecta) and their natural enemies from Iranian rice fields and surrounding grasslands. *Linzer Biologische Beiträge* 41(1): 639-672.
- Gharali, B., Kamali, K., Evenhuis, N., Talebi, A.A. (2010): Two new species of the genus *Apolysis* (Apolysini, Bombyliidae, Diptera) from the north of Iran. *Zootaxa* 2441: 41-52.
- Greathead, D.J., Karimpour, Y. (2006): A new species of *Villa* Lioy, 1864 (Diptera: Bombyliidae) parasitic on Sesiidae (Lepidoptera). *Zootaxa* 1156: 65-68.
- Havaskary, M., Mitra, B., Sakenin, H., Samin, N., Imani, S., Rafiee, A. (2011a): On a collection of bee flies (Diptera: Bombyliidae) from Iran. *Journal of Biological Control* 25(1): 5-10.
- Havaskary, M., Sakenin, H., Rastegar, J., Imani, S., Rafei, A., Valizade, A. (2011b): A study on the bee flies (Diptera: Bombyliidae) from Arasbaran and vicinity, Northwestern Iran. *Proceedings of Global Conference on Entomology*, March 5-9, 2011 Chiang Mai, Thailand. pp. 119.
- Hull, F.M. (1973): Bee flies of the World. The genera of the family Bombyliidae. *Bulleten of the United States National Museum*, No. 286. Smithsonian Institution Press, Washington, D.C.
- Özbek, H. (2008): Türkiye'de ıllman iklim meyve türlerini ziyaret eden böcek türleri. *Uludağ Arıcılık Dergisi* 8(3): 94-105.
- Sakenin Chelav, H., Raheb, J., Imani, S., Havaskary, M., Shirdel, F., Mohseni, H. (2008): A preliminary survey on dipteran predators and parasitoids and Odonata in Iranian rice fields. *Proceedings of National Conference of Agronomical Rice Breeding*, Young Research Club Islamic Azad University of Ghaemshahr, 26-27 November, Abstract p. 79 (Full paper in CD Rom, 14 pp) [In Persian with English Summary].
- Theodor, O. (1983): The genitalia of Bombyliidae (Diptera). *Israel Academy of Sciences and Humanities*, Jerusalem, 275p.
- Yeates, D.K., Greathead, D.J. (1997): The evolutionary pattern of host use in the Bombyliidae (Diptera): a diverse family of Parasitoid flies. *Biological Journal of the Linnean Society* 60: 149-185.
- Zaitzev, V.F. (1966): Revision of the parasitic flies of the genus *Hemipenthes* Lw. (Diptera, Bombyliidae) of the Palaeartic Region. *Trudy Vsesoyuznogo Entomologicheskogo Obshchestva* 51: 157-205.
- Zaitzev, V.F. (1991): The phylogeny and system of Diptera of the superfamily Bombylioidea (Diptera). *Entomological Review* 71: 94-114.
- Zaitzev, V.F. (1999): On the fauna of flies of the family Bombyliidae (Diptera) of Israel. *Entomologicheskoe Obozrenie* 78: 703-718.