

## FOUR SPECIES AS NEW RECORDS OF TRIBE CHRYSOGASTERINI (DIPTERA: SYRPHIDAE) FROM IRAN

**A. Shakeryari\*, S. Khaghaninia\* and K. Haddad Irani Nejad\***

\* Department of Plant Protection, Faculty of Agriculture, University of Tabriz, 51664, Tabriz, IRAN. E-mail: ashakeri1364@gmail.com

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ABSTRACT: In order to study the hoverflies fauna of the subfamily Milesiinae (Dip.: Syrphidae) in Kandovan region (East Azerbaijan province) a survey was conducted during 2010-2011. Totally, 4 species belonging to the tribe Chrysogasterini were identified which all are new records for the insect fauna of Iran and listed as follow: *Melanogaster hirtella* Loew, 1843, *Melanogaster parumplicata* Loew, 1840, *Orthonevra brevicornis* Loew, 1840 and *Orthonevra nobilis* Fallen, 1817.

KEY WORDS: Chrysogasterini, Fauna, Syrphidae, Kandovan, Iran.

Hoverflies is one of the largest and most diverse families of the order Diptera which include about 200 genera and more than 6000 described species over the world. Flower flies of the subfamily Milesiinae are the most common and conspicuous which contain about two thirds of hoverfly fauna. Many species, being regular visitors of flowers, are important pollinators of various plants including vegetables, fruit trees (Asteraceae, Brassicaceae, and Rosaceae) and flowering plants (Kevan & Baker, 1983).

In this subfamily, humeri is hairy and head naturally sits well forward so that the humeri is clearly visible. Most of Milesiinae larvae are filter feeders in all kinds of aquatic media and are commonly called rat-tailed maggots (Stabbs & Falk, 2002).

One of the significant character of these flies is the ability of them to keep the body motionless in the air for quite a period of time during flight. The adults mainly feed on nectar or pollen for proteins, lipids and vitamins (Saribiyik, 2003).

The presence of a concave face, smoothly leading to a projecting mouth margin, is characteristic of the tribe Chrysogasterini. The only exceptions are males of the genus *Chrysogaster*, which has a knob like *Cheilosia*, although no distinct eye rim is present at the side of the face beside the eye. The genus *Melanogaster* is smaller and darker with less evidence of iridescence than the remaining species of *Chrysogaster* (Maibach et al., 1994). The hind femur has small spines on the ventral surface, but these are very difficult to observe in some species. The males of *Chrysogaster* and *Melanogaster* have eyes which meet on top of the head and there is a facial knob. The top of the abdomen is particularly flat in *Chrysogaster*, *Lejogaster*, *Melanogaster*, *Orthonevra* and *Myolepta* (Stabbs & Falk, 2002).

Recently the hoverflies fauna of Iran were studied by some taxonomists (Dousti & Hayat, 2006; Gharali & Reemer, 2008, 2010; Khaghaninia et al., 2010ab; Khaghaninia & Bashiri, 2011). Unfortunately the Syrphids of the Kandovan region have not been yet studied so it subjected for present study.

## MATERIAL AND METHODS

The adult specimens were collected from Kandovan valley using common entomological net during 2010-2011 (Fig. 1). Kandovan valley is one of the longest Sahand chain mountains' valleys with about 12 km length, located in southern east of East Azerbaijan province, Iran. This biosphere reserve situated in the south of Sultan mountain, one of the Sahand's summits, with about 35.5 km distance of Tabriz city with UTM (Universal Transfer Mercator) coordinate system, X from 609181.42 to 617583.55 E; Y from 4177170.42 to 4183938.80 N and varying latitude from 1860 m to 3110 m a.s.l. This area has rich grass lands with various species of Astraceae, Umbelifera, Legominaceae and Ronunculaceae. The specimens were killed in a killing jar containing potassium cyanide and the voucher specimens were deposited at Insect Museum of Tabriz University. The specimens were identified based on valid keys such as Stubbs & Falk (2002) and Speight (2008). The range and flower visited of the recorded species are provided mostly from Speight (2010).

## RESULTS

### Chrysogasterini

**Diagnostic characters:** The members of this tribe mostly has a concave face and with very different appearance. In *Chraysogaster* group, the abdomen is entirely black, blackish, metallic green, blue or blackish-gray with faint gray spots. Also tergites in *Orthonevra* and *Melanogaster*, tergites are dull or semi-shining black on dorsal surface (Stubbs & Falk, 2002).

### Key for the studied genera

(Adapted from Bei- Bienko 1988 and Stubbs and Falk, 2002)

- Body metallic green or bronzy. 3rd segment of antennae usually elongate. Face of male without median tubercle. Tergite 1 with metallic margin as on other tergites..... *Orthonevra*
- Tergite 1 dull at margin, contrasting with metallic margins of other tergites. antennae with third segment completely black. hairs on sternite 2 as long as those on thoracic dorsum..... *Melanogaster*

### Key for the studied species of *Melanogaster*

- 1- Eyes meet on top of the head (Males) .....2
- Eyes separated (Females) .....3
- 2- Thoracic dorsum (viewed from front) with hairs partly yellowish-brown, face without knob only slightly developed ..... *hirtella*
- Thoracic dorsum (viewed from in front) with hairs entirely black, face with knob only slightly developed ..... *parumplicata*
- 3- Thoracic dorsum with hairs yellow (or grayish) and upstanding (view from side), Lip sharply angled ..... *hirtella*
- Thoracic dorsum with sparse golden hair lying almost flat on surface, Lip not sharply angled..... *parumplicata*

**Key for the studied species of *Orthonevra***

1- Third antennal segment about as long as deep, frons in male is in form of broad unequal-sided triangle. upper margin of tergite 5 is dark colored, body length is 5.0 to 7.0 mm, surstyli greatly broadened in basal half.....***brevicornis***

- Third antennal segment twice as long as deep. frons in male is in form of equilateral triangle, upper margin of tergite 5 entirely black, body length is 5.5 to 6.0 mm, surstyli moderately broad, with sharply defined angle on ventral margin..... ***nobilis***

***Melanogaster hirtella* (Loew, 1843)** (Fig. 2)

**Material examined:** 2 specimens (2♂♂): Kandovan; 37°46.95' N 46°15' E, 2341 m, 13 July 2010.

**Diagnostic characters:** Smallish very black specimens with black antennae, the wings clear or only slightly brownish, females often have a shining abdomen. Wing length 5-6 mm (Speight 2010).

**Flowers visited:** White umbellifers; *Caltha*, *Euphorbia*, *Iris pseudacorus*, *Menyanthes*, *Mimulus guttatus*, *Potentilla erecta*, *Pyrus communis*, *Ranunculus*, *Sorbus aucuparia*, *Taraxacum*, *Viburnum opulus*.

**Range:** Denmark south to the Pyrenees and Portugal; Ireland eastwards to the Alps (Switzerland, Liechtenstein); Britain.

***Melanogaster parumplicata* (Loew, 1840)** (Fig. 3)

**Material examined:** 1 specimens (1♂): Kandovan; 37°46' N 46°15' E, 2358 m, 5 August 2010.

**Diagnostic characters:** Legs are entirely black. Face profile gently curved. Wing length 5.5-7 mm. The male has a weak facial knob (very pronounced in *aerosa*) and the female facial profile is gently curved (very angular in *aerosa*) between the antennae and the lip (Stabbs & Falk, 2002).

**Flowers visited:** Umbellifers, *Caltha*, *Crataegus*, *Prunus spinosa*, *Ranunculus*, *Rhamnus cathartica*, *Taraxacum*.

**Range:** Norway, Sweden, Southern Finland, Poland, northern, central and south-west Germany, the Swiss Jura and the Balkans (Bosnia-Herzegovina and Montenegro).

***Orthonevra brevicornis* (Loew, 1840)** (Fig. 4)

**Material examined:** 3 specimens (3♀♀): Kandovan; 37°45' N 46°18' E, 2705 m, 5 August 2010.

**Diagnostic characters:** The stigma has a tiny dark spot at the base. The third antennal segment is usually dark above and orange below. The male resembles *Chrysogaster* except that the face is concave. The female has erect pale hairs on the thoracic dorsum, a feature otherwise only found in combination with black antennae in *Melanogaste* (Stabbs & Falk, 2002).

**Flowers visited:** Umbellifers; *Cornus*, *Crataegus*, *Malus*, *Pyrus communis*, *Ranunculus*, *Rorippa*, *Salix*.

**Range:** Southern Finland and Denmark south to northern France (Brittany); from Britain (England) eastwards through parts of central Europe (Netherlands, Belgium, Germany, Poland) into European parts of Russia, the Caucasus and western Siberia.

***Orthonevra nobilis* (Fallen, 1817)** (Fig. 5)

**Material examined:** 8 specimens (8♀♀): Kandovan; 37°45' N 46°17' E, 2621 m, 20 July 2011.

**Diagnostic character:** The stigma is dark and there is often slight darkening of the center of the wing, in combination giving a clue to identification in the field.

The third antennal segment is rather pointed at the apex. Females have a small tubercle at the apex of tergite 4. Wing length 4-5.75 mm (Stabbs & Falk, 2002).

**Flowers visited:** White umbellifers; *Fragaria*, *Galium*, *Potentilla erecta*, *Ranunculus*.

**Range:** From central Norway south to Pyrenees and central Spain; from Ireland eastwards through northern and central Europe into European parts of Russia; also in mountainous parts of Italy, the former Yugoslavia, Greece and Turkey; the Caucasus; through Siberia to the far east; China.

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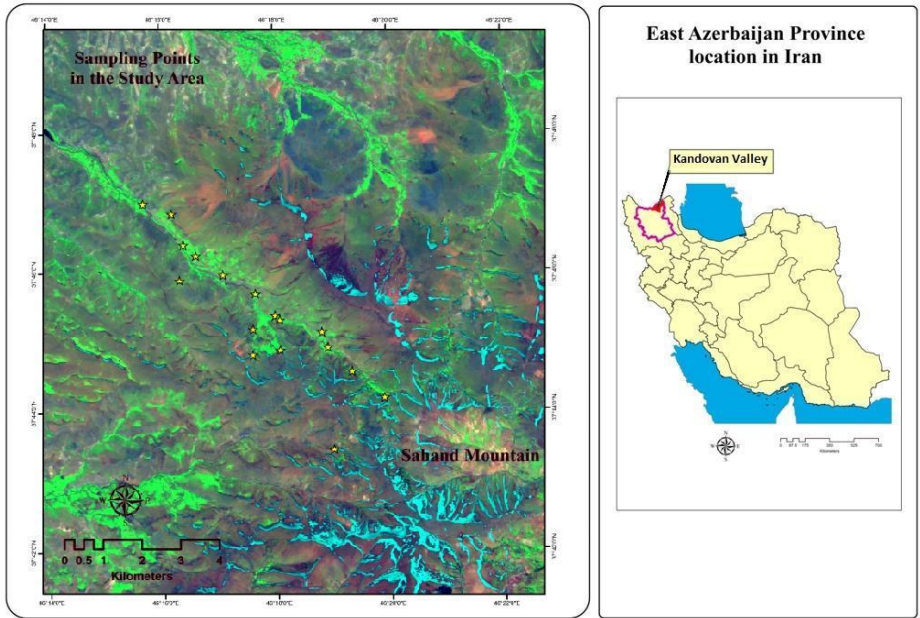


Figure 1. Location of sampling points in Kandovan valley, based on satellite image (SPOT).

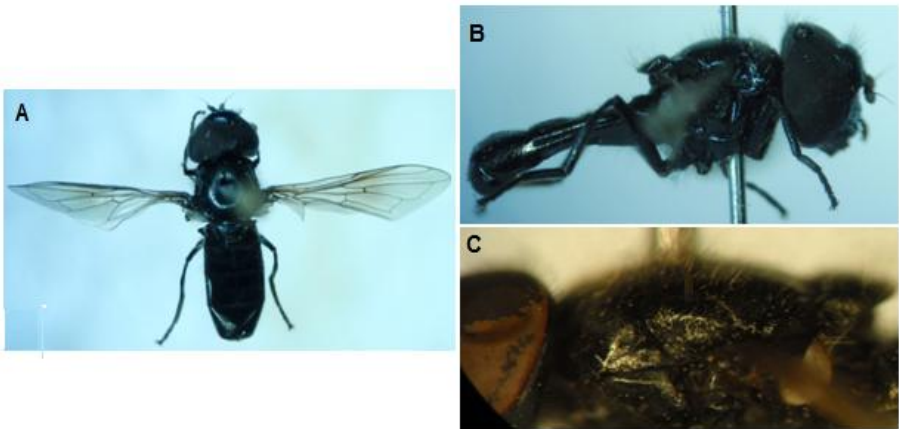


Figure 2. *Melanogaster hirtella*: a- male, dorsal view, b- lateral view, c- thoracic dorsum (Original).



Figure 3. *Melanogaster parumplicata*: a- male, dorsal view, b- lateral view, c- face with knob (Original).

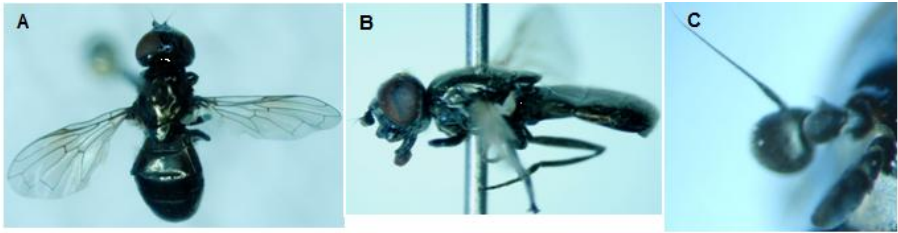


Figure 4. *Orthonevra brevicornis*: a-Female, dorsal view, b- lateral view, c- antennae (Original).



Figure 5. *Orthonevra nobilis*: a- Female, dorsal view, b- lateral view, c- antennae (Original).