

## SYNOPSIS OF THE GENUS *CHRYSOGASTER* LOEW, 1857 (DIPTERA: SYRPHIDAE) IN IRAN

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ABSTRACT: Based on specimens collected in the northern parts of Iran, species of the genus *Chrysogaster* occurring in Iran is reviewed. *Chrysogaster coemiteriorum* Linnaeus, 1758 and *C. rondanii* Maibach & Goeldlin, 1995, are newly reported for the Iran insect fauna and a key to five species of the genus in Iran is presented.

KEY WORDS: *Chrysogaster*, Milesiinae, Syrphidae, Flowerflies, Iran.

Hoverflies belong to one of the most diverse fly families which include about 200 genera and more than 6000 species worldwide. Flowerflies 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).

Most of Milesiinae larvae are filter feeders in all kinds of aquatic media and are commonly called rat-tailed maggots. It is usually found where bushes or trees, hogweed, angelica and water-dropworts are very attractive (Stubbs & Falk, 2002). The adults mainly feed on nectar or pollen for proteins, lipids and vitamins (Saribiyik, 2003).

The males in genus *Chrysogaster* are rather more slender than the females, the latter usually having an exceptionally broad oval abdomen. The abdomen is normally dull on top but rather shining in some specimens, especially females. Confusion is most likely with *Cheilosia*, especially *Cheilosia vernalis* whose females have an abdomen of similar shape (Stubbs & Falk, 2002).

The males of *Chrysogaster* and *Melanogaster* have eyes which meet on top of the head and there is a facial knob. The flatted area on top of the abdomen is normally dull although a problem can arise with some female specimens where the black abdomen is somewhat shining, but the furrows on the frons may help avoid the assumption that such specimens belong to *Cheilosia*. The females have transverse furrow across the frons (Maibach et al., 1994).

Dusti & Hayat (2006) presented the first checklist of flower flies of Iran which contain only a single species, *Chrysogaster viduata*. Then few species of the genus were added to the fauna of Iran by some taxonomists (Gharaei & Lotfalizadeh, 2001; Khaghaninia et al., 2010; Khaghaninia et al., 2011). Here we record as new two species of the genus from Iran and present a key to all species occurring in this area.

### MATERIAL AND METHODS

The specimens were identified using the keys, Stubbs and Falk (2002) and Speight (2010). The distribution records and visited flowers of species are

provided mostly from Speight (2010). Materials were deposited in the collection of agricultural faculty, Tabriz University.

## RESULTS

### *Genus Chrysogaster* (Meigen, 1803)

The genus *Chrysogaster* is distinguished from other genera of Milesiinae by the following characters:

Body black, metallic, lustrous; abdomen in middle and upper parts usually matt; eyes in male contiguous; face in male with short median tubercle; third segment of antennae short.

#### Key<sup>1</sup> to species of *Chrysogaster* in Iran

- 1- Male (eyes holoptic) .....2  
 - Female (eyes dichoptic) .....6
- 2- Side of thorax above front coxa with extensive area strongly gray dusted.....  
 .....*cemiteriorum*  
 - Side of thorax above front coxa shining black.....3
- 3- Top of thorax matt black; angle of frons where eyes meet not exceeding 90 .....*basalis*  
 - Top of thorax shining; angle of frons where eyes meet greater than 90 .....4
- 4- Mouth margin protruding longer than median facial tubercle.....*viduata*  
 - Mouth margin protruding shorter than median facial tubercle.....5
- 5- Face with developed knob; top of thorax with most hairs inclined at about 45 .....  
 .....*virescens*  
 - Face with knob less developed; top of thorax with most hairs much more erect.....  
 .....*rondanii*
- 6- Pleura heavily gray dusted above front coxae basal veins and often sub-costal cell strongly yellow-tinged.....*cemiteriorum*  
 - Pleura glossy black above front coxae; basal veins and often sub-costal cell brownish.....7
- 7- Wing at most brownish in front face wide.....8  
 - Wing strongly black; face narrow.....9
- 8- Top of thorax virtually bald; sternite 1 with hairs shorter than width of hind femur.....  
 .....*virescens*  
 - Top of thorax with shorter pale hairs; sternite 1 with hairs as long as width of hind femur  
 .....*rondanii*
- 9- Mesonotum almost glabrous; abdomen with long dense hairs .....*viduata*  
 - Mesonotum almost hairy; abdomen with short dense hairs.....*basalis*

### *Chrysogaster basalis* (Loew, 1857)

**Material examined:** 2 specimens (1♂, 1♀): Qaradag forests; 38°51' N 46°72' E, 1360 m, 19 August 2009 (collected by S. Khaghaninia, deposited at Insect Museum of Tabriz University).

<sup>1</sup> Adapted from Bei- Bienko (1988) and Stubbs and Falk (2002)

**Diagnostic characters:** Wing darkened (black-brown). Antennae black. Abdomen in upper and middle parts usually matt. Median tubercle of face in male well developed, with sharp outline. Body 6.0 to 8.0 mm (Bei- Bienko, 1988).

**Flowers visited:** White umbellifers, *Chrysanthemum leucanthemum*, *Potentilla*.

**Range:** from northern France and southern Germany south to Spain and Portugal and in N Africa, Switzerland, Roumania and much of the Balkan Peninsula (Bosnia-Herzegovina, Croatia, Greece, Macedonia, Serbia), Ukraine, Kazakhstan and Tajikistan.

***Chrysogaster coemiteriorum* (Linnaeus, 1758) (Fig. 1)**

**Material examined:** 1 specimens (1♀): kendovan Valley; 37°46' N 46°16' E, 2496 m, 27 May 2010 (collected by A. Shakeryari, deposited at Insect Museum of Tabriz University).

**Diagnostic characters:** The unique character within the genus is the presence of grey dusting on the pleura just above the front coxae. Whilst dusting is obvious in some specimens, this is not always so and care is necessary lest the legs mask the area concerned (Stubbs and Fulk, 2002).

**Flowers visited:** White umbellifers, *Sambucus ebulus*.

**Range:** Fennoscandia south to North Africa, from Ireland eastwards through most of Europe (though extremely localized in the Alps) into Russia and on to the Pacific coast.

***Chrysogaster rondanii* (Maibach & Goeldlin, 1995) (Fig. 2)**

**Material examined:** 1 specimens (1♂): kendovan Valley; 37°46' N 46°17' E, 2338 m, 11 Jun 2011 (collected by A. Shakeryari, deposited at Insect Museum of Tabriz University).

**Diagnostic characters:** A very species small. The male has a broader face with the knob and the top thorax has long black hairs. The antennae are usually dark. The female thorax and scutellum with pale hairs at the margins (Maibach & Goeldlin, 1995).

**Flowers visited:** *Cytisus*, *Ilex*, *Crataegus*, *Prunus spinosa*.

**Range:** Netherlands, France, Germany and Switzerland.

***Chrysogaster viduata* (Linnaeus, 1758)**

**Diagnostic characters:** Abdomen, on upper side entirely lustrous, Bases of wing not yellow, Wing strongly black, Face no wide, visits stream margins to drink during hot weather (Speight 2010).

**Flowers visited:** White umbellifers; *Cornus*, *Filipendula*, *Galium*, *Sambucus*.

**Range:** From Fennoscandia south to Iberia and the Mediterranean, including North Africa; from Ireland eastwards through much of Europe into European parts of Russia as far as the Ukraine and the Caucasus mountains.

Note: This species was firstly recorded from East Azerbaijan province, in the North-West of Iran (Gharali, 2001).

***Chrysogaster virescens* (Loew, 1854)**

**Material examined:** 9 specimens (5♂♂, 4♀♀): (4♀♀) Mekidi village (on bogs); 38°50' N 46°54' E, 1656 m, 19 Aug. 2008, (5♂♂): Varzghan (on reed beds near to Varzghan dam ; 38°30' N 46°37' E, 1689 m , 7 July 2010 (collected by S. Khaghaninia, deposited at Insect Museum of Tabriz University).

**Diagnostic characters:** The thorax and scutellum have a greenish reflection which is strongly developed in some females but less obvious in many specimens.

The antennae are usually orange but it is not uncommon to find specimens with very dark antennae, so care needs to be taken to check other key features (Stubbs and Fulk, 2002).

**Flowers visited:** White umbellifers, *Filipendula*, *Ilex*, *Iris*, *Ranunculus*.

**Range:** Southern Finland, Ireland, Britain and the Atlantic seaboard of Europe from Denmark to the Pyrenees and northern Spain, Switzerland and central Europe.

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Figure 1. *Chrysogaster coemiteriorum*, a- Female, dorsal view, b- lateral view, c- sub-costal cell (Original).

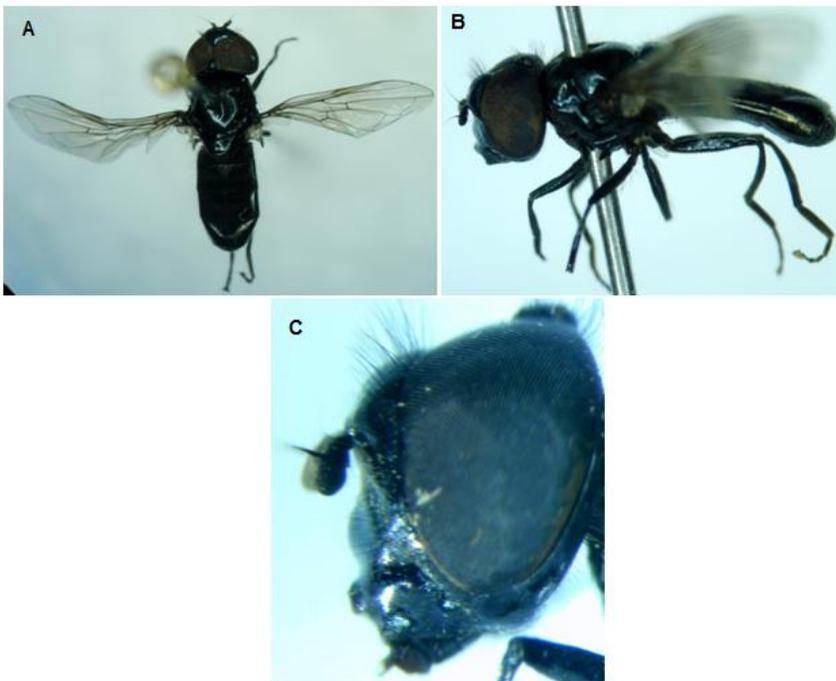


Figure 2. *Chrysogaster rondanii*, a- Male, dorsal view, b- lateral view, c- Face with knob (Original).