

Identification key and redescription of saprophagous syrphids flies (*Eristalinus sepulchralis* and *Microdon fulvopubescence*) from Punjab, Pakistan

^{1*} Shahmshad Ahmed Khan, ¹ Muhammad Anjum Aqueel, ² Humairah Hanif

¹ University College of Agriculture, University of Sargodha, Pakistan.

² University College of Agriculture, University of the Punjab, Pakistan.

Abstract

Eristalinus and *Microdon* are two important scavenger genera of *Syrphid* flies. Unlike other countries in Pakistan no such type of work has been done to explore the fauna of saprophagous hoverflies. Collection of specimens was done at Chakwal, Punjab, Pakistan in 2014. This paper showed two saprophagous syrphid species belong to Genus *Eristalinus* (*Eristalinus sepulchralis*, Linnaeus) and *Microdon* (*Microdon fulvopubescence*). These species 1st time recorded from Chakwal Punjab Pakistan. Aim of this study is to develop the identification key for *Eristalinus* and *Microdon*.

Keywords: Redescription, Identification key, Pakistan, Saprophagous Syrphids

Introduction

Family *Syrphidae* is one of the largest families of the order Diptera with more than 6000 described species over the world and consist of flies commonly known as hoverflies, flower flies or Sun flies. This syrphid fly family consists of small to medium flies about 6-18mm long most of which have black and yellow striped bodies resembling wasps and bees. The members of family *Syrphidae* have a characteristic feature having Vena spuria, It is a vein like thickening in the membrane of wing. The subfamilies *Eristalinae* and *Microdonatinae* 1stly have been studied by Brunetti [1, 2, 3, 4]. All these researchers described many saprophagous hoverflies of Indo- Pak continent. Unfortunately in Pakistan no work has been done on these important species of hoverflies. Both sub families *Eristalinae* and *Microdonatinae* have great importance due to their environment friendly behaviour and important role in pollution [5]. described both sub families from Baluchistan, Pakistan. Present study was conducted to check the saprophagous fauna of hoverflies in Chakwal Punjab Pakistan and develop the identification key.

Materials and Methods

Collection of specimens was done from different locations of district Chakwal. Collection was done from January 2014 to December 2014. The collected specimens were killed with the help of Cyanide bottle. After Killing specimens were properly set and identified with the help of specific literature [6, 1].

Results

Head

Black vertex slightly raise with black hairs on posterior; eyes are reddish brown (fig. 1), oblong ocelli, face and frons almost in parallel sided, black pubescence in above antennae and grey yellowish in below antennae, Antennae black second joint is shorter than the third, occiput black, arista yellowish- brown.

Thorax

Thorax is black, having dense brown yellowish pubescence; blunt tooth are produced with scutellum and hind corner.

Abdomen

Much broader than thorax, abdomen is black in color, orange to yellowish pubescence.

Head

Yellowish brown eyes, spotted, pale pubescence covered the entire surface (fig. 2), wide apart in female and contiguous in males; black vertex, prominently raised triangular; orange ocelli; face yellow, pubescent, black distinct knob, black mouth; normal antennae, outer side of the first segment is black, while inner side is brown, with arista dorsal and bare.

Thorax

Thorax entirely black, gray stripes on dorsum, Quadrate; black shiny scutellum, with pubescence

Abdomen

Black, Oval and pubescent

Identification Key

Key to Subfamily

Microdontinae

- 1 Elongated antennae as long as head, face evenly and strongly convex, eyes in both sexes separated widely, absolutely without trace central prominence, rather round large flies.....MICRODONTINAE

Subfamily Microdontinae

Key to Genera Microdon

1. First antennal joint is elongated, cylindrical, shorter than in *Microdon*; 2nd joint is so minute as to be ignored easily, 3rd part is much longer than the 1st.....PAEAMIXOGASTEK
First antennal joint is as long as 3rd segment; 2nd segment is short but always obvious, sometime same the length of 3rd joint; the closed 1st posterior cell nearly always with a spur on front margin..... MICRODON

Key to Species of Microdon

Microdon fulvopubescence

1. Distinct 2nd abdominal segment while not greatly contracted in middle, subclavate appearance; scutellum small, vertex well developed and round..... (2)
2nd abdominal segment is never contracted; abdomen elongateconical, short and rounded, not at all subclavate..... (3)
2. Orange legs; wings pretty clear, 4th vein in the wings recurrent at a right angle.....*contractus*
Considerably black femora; microscopic obvious pubescence on wings, 4th vein recurrent at an acute angle.....*conveniens*
3. Brilliantly metallic species.....(4)
Non metallic species..... (5)
4. White hair spots are absent on abdomen..... *stilboides*
White hairs spots are present on abdomen..... *metallicus*
5. Small in size about 5mm long..... *cceruleu*
Large in size about 10 to 13 mm long..... (6)
6. Much broader abdomen than thorax..... *Fulvopubescence*



Fig1: *Microdon fulvopubescence* Brunetti

Subfamily

Key to Subfamily

1. Stigmal cross veins, cell r 4+5 mostly having no connecting vein with R4+5 or M vein, R4+5 always looped, hardly ever connecting vein from apical cross vein, femora with well-developed basal patch of decumbent stubby black spinules; pilose meta sternum..... ERISTALINAE

Subfamily Eristalinae

Key to genera

1. Shorter anal veins, hardly reaching the wing margin; 3rd vein loops is normal..... *Eristalinus*

Key to species of Eristalinus

Eristalinus sepulchralis

1. Hairs all over the eyes; black tergites, partly greenish shining; small sized species 6.5-8mm long. In males eyes are well separated; vague greyish stripes on thorax; while in case of female conspicuous five greyish stripes on thorax..... *sepulchralis*



Fig 2: *Eristalinus sepulchralis* Linnaeus

Discussion

A study was conducted at Multan Punjab Pakistan to check the floral host plant range of syrphid flies under natural conditions. Result showed that floral host preference of 15 most abundant syrphid fly species was assessed towards the 40 non agricultural and 11 agricultural plant species in 28 families under natural field conditions. Saprophagous specie *Eristalinus aeneus* was also recorded from this area. About 84 species of hoverflies have been recorded from Pakistan [7].

According to [7] *Eristalinus laetus* found in Multan, Peshawar, Quetta and Ziarat and it is considered most abundant specie in Multan. While another saprophagous specie *Eristalinus taeniops* was recorded from Multan, Jhang, Quetta and Pishin.

In present study two species of saprophagous hoverflies (*Microdon fulvopubescence*, *Eristalinus sepulchralis*) were recorded from Chakwal Punjab Pakistan. According to the previous studies a work has been done on genus *Eristalinus* in Pakistan but not such type of work has been done on *Microdon*.

References

1. Brunetti E. The fauna of British-India including Ceylon and Burma. Diptera, Taylor and Francis, London; DOI Electronic Resource Number, 1923; 3:424
2. Patel JR. Some syrphids of Gujarat and their hymenopterous parasites. Indian J Ent. DOI Electronic Resource Number. 1969; 31:86-90.
3. Keiser HP. Taxonomy of Eristalinae of Ceylon. Entomol Month Mag; DOI Electronic Resource Number 1958; 89:20-35
4. Lambeck HJP, Van Brink JM. Contribution to the knowledge of the taxonomy, faunal composition and cytology of the syrphid flies (Diptera: Syrphidae) of Kashmir (India). I. Taxonomic account and faunal composition Genen Phaenen, DOI Electronic Resource Number, 1973; 16:87-100.
5. Arif MJ, Suhail A, Yousuf M. Taxonomic Studies of Saprophagous Syrphids from Pakistan. International Journal of Agriculture & Biology; DOI Electronic Resource Number, 2002; 4(1):76-77.
6. Vockeroth JR. A revision of the genera of the Syrphini (Diptera: Syrphidae). Mem Ent Soc, Canad; DOI Electronic Resource Number 1969; 62:1-176.
7. Irshad M. Review: Role of Syrphids (Diptera: Syrphidae) as Biotic Agents and Pollinators in Pakistan, Journal of Bioresource Management, DOI Electronic Resource Number. 2014; 1(2):1-8.