

## Diversity and fauna of hoverflies (Syrphidae) in Chakwal, Pakistan

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### Abstract

Syrphid flies are the important pollinators after honey bees, immature of these flies' feeds on aphid. Collection of adult hoverflies was done by the help of hand nets during March, April (2015) from all over the district Chakwal, Pakistan. Result showed that there are sixteen species are identified belonging to 13 genera and two sub families.

**Keywords:** Faunistic study, Hoverflies, Syrphinae, Milesiinae.

### 1. Introduction

Hoverflies are also known as syrphid flies or flower flies as the name hoverflies is due to hovering characters around the flowers. The size of hoverflies depends on the specie like the members belong to genus *Baccha* are very small and slenderical in shape while on the other hand the members of the genus *Criorhina* are hairy, large and black to yellowish in color. Hoverflies belong to order diptera and they are considered as very important group of insect because of their beneficial aspects. Hoverflies are most important and diverse group of Diptera which include the 200 genera and 6000 identified species around the world [1]. Syrphinae and Milesiinae are the two most important sub families of the family Syrphidae. Most of the hoverflies are important pollinators of the many flowers. Larval stage of the many species of the hoverflies are also predator of the aphid and some other pests [2]. Larvae of hoverflies have different feeding modes like saprophagous, aphidophagous, zoophagous and phytophagous [3]. While the adults are the flower visitors they can visit large number of flowers in one day. Adult hoverflies feed on plant nectar for energy while the requirement of protein is fulfilled by feeding on pollens [4]. Nectar and pollen also increases their egg laying capacity and life of the adult dipterans [6]. Some of the hoverflies species (Syrphidae) are also considered as very important pollinators of different crops. Hoverflies are most widely present during the March and April in Pakistan while they prefer the intermediate temperature and humidity 23 °C to 59%.

Keiser (1958) published 56 species belongs to 18 genera of the sub family Eristalinae (Milesiinae) from Ceylon [6]. During 1892 Bigot published a list of Indian hoverflies. Coe (1964) reported 127 species from Nepal in which 28 are new belongs from 29 genera [7]. 21 species of the genus *Sphaerophoria* were reported from Japan during 1967 by Okuno [8]. Patel during (1969) described the differentiation characteristics of 13 species of the Syrphid flies from Gujarat [9]. Kapoor and Kohli (1985) identifies 260 species belongs to 63 genera from India [10]. M. Saleem (2001) reported 12 species and 10 genera from Peshawar Pakistan [11].

Chakwal is the most important and beautiful district of Rawalpindi Division in Punjab, Pakistan. It is located 111 km

from south side of the Islamabad at an altitude of 1689ft while its coordinates are 32.55°N 72.51°E and it has latitude 32° 56' 0N Longitude 72° 51' 31E. It is important because of lakes and beautiful valleys and some very important and historical places are also present. Different vegetables and fruits are also grown in Chakwal. Due to building of different dams and irrigation system local growers prefer to grow vegetables and fruits then the wheat and other annual crops.

The current study was conducted to determine the Hoverflies (Syrphidae) fauna in Chakwal during March and April 2015. An area was selected where vegetable crops and ornamental flowers are grown and.

### 2. Materials and methods

Study was conducted at Chakwal, Pakistan during 2015 to determine the Hoverflies (Syrphidae) fauna in Chakwal during March and April an area was selected where vegetable crops and fruits are grown and it also have the forest adjacent to this area.

#### Floral complex and other Plants

Different vegetables and flowers are grown to sale in local market but beside this different forest trees are also act as attractant for the flies. Tagging of different plants was done having high inflorescence and good for the flies.

#### Counting of Hoverflies species

Counting of hoverflies was done on daily basis from the tagged plants. Tagging may also changed from one plant to other depending on the inflorescence. Every time when the new type of hoverfly was appear collection was also done and after killing in cyanide bottle it was pinned in the insect box for specie identification. The same process was repeated for the every new specie. Study was conducted during March and April because after this weather become hot so survival of flies in open places was difficult.

#### Laboratory examination

For laboratory examination adults of syrphid flies were collected with the help of hand net during the study time March, April 2015. After collection the specimens were killed with the help

of cyanide bottle. The collection was brought into laboratory and placed into desiccators having water at the bottom and after 24 hours they become soft. Before pinning wing venation and setting of legs were also done on setting board to help their morphological studies. After this proper labeling was also done and pinned into BHC powder treated insect box also having naphthalene balls to repel the insects away. For identification of the insect dead specimen were mounted on revolving stage and examine under the binocular microscope with magnification 6.4X x 10X, 16X x 10X, 40X x 10X

### 3. Results

Results showed that twenty species and fifteen genera of hoverflies was noted fling around the flowers and two sub families. Study conducted for the investigation of fauna of Syrphid flies of the district Chakwal, Pakistan. Results showed that 16 species and 13 genera belong to two sub families were reported from the Chakwal listed below.

#### Subfamily Syrphinae

- ◆ **Genus Ichiodon**  
✓ *Ichiodon scutellaris*
- ◆ **Genus Episyrphus**  
✓ *Episyrphus balteatus*
- ◆ **Genus Eupeodes**  
✓ *Eupeodes corollae*
- ◆ **Genus Sphaerophoria**  
✓ *Sphaerophoria bengalensis*
- ◆ **Genus Scaeva**  
✓ *Scaeva latimaculata*
- ◆ **Genus Xanthogramma**  
✓ *Xanthogramma citrinum*
- ◆ **Genus Xanthandrus**  
✓ *Xanthandrus comtus*
- ◆ **Genus Paragus**  
✓ *Paragus luteus*

#### Subfamily Milesiinae

- ◆ **Genus Eristalinus**  
✓ *Eristalinus aeneus*  
✓ *Eristalinus laetus*  
✓ *Eristalinus taeniops*  
✓ *Eristalinus arvorum*
- ◆ **Genus Eristalis**  
✓ *Eristalis tenax*
- ◆ **Genus Syrritta**  
✓ *Syrritta pipiens*
- ◆ **Genus Mesembrius**  
✓ *Mesembrius bengalensis*
- ◆ **Genus Milesia**  
✓ *Milesia sexmaculata*

### 4. Discussion

Asif Sajjad *et. al.* (2010) conducted a study to investigate the hoverfly population at Bahauddin Zakariya University Multan. During study they use different methods to study the hoverfly fauna of the Multan. Results showed that there are two sub families and 14 genera belong to 11 genera. The most common

genera is the Eristalinus and the both sub families are equally common.

Muhammad Saleem *et al.* (2001) conducted a taxonomic study to investigate the hoverfly species in Pakistan. Collection was done from Peshawar and preserved for the taxonomic study. Results showed that there are 12 species are present in Peshawar all these species belongs to 10 genera.

In present study species belongs to both sub families Syrphinae and Milesiinae are equally common. Both sub families have eight, eight species. In case of genus sub family Syrphinae is more common than the Milesiinae. Chakwal has the moderate temperature which is suitable for the population of any insect. Large number of hoverfly population was present in some areas of the District.

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