

Hoverflies of Soon Valley Khushab Punjab Pakistan

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Abstract:

Current study was conducted to explore the hoverflies of Soon valley Khushab. This study was conducted from January 2014. The collection was done in the timing of 8 AM to 5 PM. In current study 20 species in 17 genera were identified belonging to family Syrphidae. These species were Ischiodon scutellaris, Episyrphus balteatus, Eupeodes corollae, Scaeva latimaculata, Xanthandrus comtus, Eristalinus aeneus, Eristalinus laetus, Eristalinus arvorum, Eristalis tenax, Syrphus pipiens, Eristalinus taeniops, Milesia sexmaculata, Syrphus ribesii, Syrphus confrator, Paragus bicolor, Paragus plus, Eristalis cerealis, Xylota nursei, Ceria dimidiatipennis and Sphaerophoria Indiana.

Key words: Diptera, Hoverflies, Syrphidae, Soon Valley, Khushab

Introduction

Order Diptera is the 2nd largest group of insect distributed all over the world except in Antarctica.

The insect order Diptera is divided into two sub orders- thread like horn “Nematocera” and short horn “Brachycera”

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(Williams et al., 1992) (Evenhuis et al., 2007 [Accessed 20 January 2008].) (Hennig, 1973). According to (Williams, Dudley, W and Feltmate, 1992), 15 super families, about 150 families for 10,000 genera and 150,000 described species (Colless and McAlpine., 1991) all over the World. Dipterans are about 14% of the world insect fauna.

Their high presence and color and their diurnal and nocturnal and striking behaviour make them most popular group for the entomologists. The order Diptera includes many familiar species of high economic importance as vectors of dangerous diseases for man and animals and pests of plants. Large numbers of dipterans are also involved in the pollination of flowers i.e. Syrphid flies (Evenhuis, 1995).

Family Syrphidae draw the attention of entomologists mainly because of their ecological services. These flies play an important role in pollination and serves as an important pollinator of many flowers (BMH et al., 2001). Hoverflies are common flower visitors to a wide range of agricultural crops as well as wild plants and are considered the most important group of pollinator flies after the honey bee (B and P, 2002).

Scientific study of hoverflies begins in 17th century when the first specie of Syrphid was described scientifically by Linnaeus from Europe (JC., 1805). Hoverflies belong to one of the diverse dipterans fly families that include about 6000 species and 200 genera (Khaghaninia et al., January 2012).

Syrphid flies are also act as bio control agents. Larvae of many syrphid flies feed upon insect pest which includes aphid, coccids and leafhoppers. So they are necessary to control the pest level in agricultural fields. Hoverflies are a very important group of dipterans insect because of their services in ecosystem are manifold. Their larvae showed different feeding modes saprophagous, zoophagous, phytophagous and aphidophagous (SOMMAGGIO, 1999), whereas adults visits hundreds of flowers of different species every day (TOOKER et al., 2006).

Syrphid flies belong to family Syrphidae, which is one of the largest families of the Diptera. The members of this family have characteristic feature of having vena spuria. The larvae of Syrphid flies can be found throughout the year in a wide variety of habitats such as saproxylic, mycophagous, predacious, saphrophagous and phytophagous. Larvae of hover flies are used as bio indicator of site quality (SPEIGHTM, 1986).

The Syrphid flies' fauna of Pakistan has been less explored than the neighboring countries. Fauna of Syrphid flies was unconsolidated until Irshad (M, 2003). Irshad and Khan (2005) compiled the list of Syrphid flies Pakistan (M and MR, 2005). Shehzad and Ghorpade first time published the check list of Syrphidae (Diptera) of Pakistan (K and A., 2013). Taxonomic studies of family Syrphidae larvae are badly ignored in Pakistan. Past studies are mainly focused on adults of Syrphid flies and work done on their larvae is negligible.

Regarding the previous studies and status about the Hoverflies, Current study was conducted to explore the hoverflies fauna of Soon Valley Khushab Punjab Pakistan.

Methods and Materials

Present study was conducted in Soon Valley district Khushab Punjab Pakistan during January to December 2014. The collection was done in the timing of 8 AM to 5 PM with the help of entomological collection nests. Collected specimens were killed by using Cyanide bottle. After killing specimens were set properly and tagging was also done for the identification. The collected specimens were identified under the stereoscope by following the different systematic and taxonomic keys (AE and SJ., 2002) (Vockeroth, 1969) (Brunetti, 1923).

Results and Discussion

In current study 20 species in 17 genera were identified belonging to family Syrphidae. These species were *Ischiodon scutellaris*, *Episyrphus balteatus*, *Eupeodes corollae*, *Scaeva latimaculata*, *Xanthandrus comtus*, *Eristalinus aeneus*, *Eristalinus laetus*, *Eristalinus arvorum*, *Eristalis tenax*, *Syritta pipiens*, *Eristalinus taeniops*, *Milesia sexmaculata*, *Syrphus ribesii*, *Syrphus confrator*, *Paragus bicolor*, *Paragus plus*, *Eristalis cerealis*, *Xylota nursei*, *Ceria dimidiatipennis* and *Sphaerophoria Indiana*. These species were collected from different location of the Valley.

Table 1.1: table showing the specie collected during study

Order	Family	Subfamily	Specie
Diptera	Syrphidae	<i>Syrphinae</i>	<i>Ischiodon scutellaris</i>
Diptera	Syrphidae	<i>Syrphinae</i>	<i>Episyrphus balteatus</i>
Diptera	Syrphidae	<i>Syrphinae</i>	<i>Eupeodes corollae</i>
Diptera	Syrphidae	<i>Syrphinae</i>	<i>Scaeva latimaculata</i>
Diptera	Syrphidae	<i>Syrphinae</i>	<i>Xanthandrus comtus</i>
Diptera	Syrphidae	<i>Syrphinae</i>	<i>Paragus plus</i>
Diptera	Syrphidae	<i>Syrphinae</i>	<i>Paragus bicolor</i>
Diptera	Syrphidae	<i>Syrphinae</i>	<i>Syrphus ribesii</i>
Diptera	Syrphidae	<i>Syrphinae</i>	<i>Syrphus confrator</i>
Diptera	Syrphidae	<i>Syrphinae</i>	<i>Sphaerophoria Indiana.</i>
Diptera	Syrphidae	<i>Milesiinae / Eristalinae</i>	<i>Eristalinus aeneus</i>
Diptera	Syrphidae	<i>Milesiinae / Eristalinae</i>	<i>Eristalinus laetus</i>
Diptera	Syrphidae	<i>Milesiinae / Eristalinae</i>	<i>Eristalinus arvorum</i>
Diptera	Syrphidae	<i>Milesiinae / Eristalinae</i>	<i>Eristalis tenax</i>
Diptera	Syrphidae	<i>Milesiinae / Eristalinae</i>	<i>Syritta pipiens</i>
Diptera	Syrphidae	<i>Milesiinae / Eristalinae</i>	<i>Eristalinus taeniops</i>
Diptera	Syrphidae	<i>Milesiinae / Eristalinae</i>	<i>Milesia sexmaculata</i>
Diptera	Syrphidae	<i>Milesiinae / Eristalinae</i>	<i>Eristalis cerealis</i>
Diptera	Syrphidae	<i>Milesiinae / Eristalinae</i>	<i>Xylota nursei</i>
Diptera	Syrphidae	<i>Milesiinae / Eristalinae</i>	<i>Ceria dimidiatipennis</i>

According to (SALEEM et al., 2001) conducted a study at Peshawar to check the hoverflies fauna. The present study regarding the Syrphid fly fauna of Peshawar Division has richly yielded about 10 genera and 12 species arranged into two sub families (*Syrphinae* and *Milesiinae*).

Collection of hoverflies species from different plantation

During present study the species were collected from different plantations. The flower and tree plantation preferred by the hoverflies shown in the table 1.2

Table 1.2: Plantation habitat of species

Specie	Plantation
<i>Ischiodon scutellaris</i>	Group of plants having, <i>Daucus carota</i> , <i>Launaea procumbens</i> , <i>Ageratum conyzoides</i> , <i>Convolvulus arvensis</i>
<i>Episyrphus balteatus</i>	Plantation around the Stagnant water, <i>Parkinsonia aculeate</i> , <i>L. procumbens</i>
<i>Eupeodes corollae</i>	Plantation around the Stagnant water, <i>Parkinsonia aculeate</i> , <i>L. procumbens</i>
<i>Scaeva latimaculata</i>	Group of plants having, <i>Daucus carota</i> , <i>Launaea procumbens</i> , <i>Ageratum conyzoides</i> , <i>Convolvulus arvensis</i>
<i>Xanthandrus comtus</i>	<i>Parkinsonia aculeata</i> , <i>Ageratum conyzoides</i> , <i>Dalbergia sissoo</i> ,
<i>Paragus plus</i>	Group of plants having, <i>Daucus carota</i> , <i>Launaea procumbens</i> , <i>Ageratum conyzoides</i> , <i>Convolvulus arvensis</i>
<i>Paragus bicolor</i>	<i>Dalbergia sissoo</i> , <i>Medicago sativa</i> , <i>Chrozophora tinctoria</i>
<i>Syrphus ribesii</i>	Group of plants having, <i>Daucus carota</i> , <i>Launaea procumbens</i> , <i>Ageratum conyzoides</i> , <i>Convolvulus arvensis</i>
<i>Syrphus confrator</i>	Group of plants having, <i>Daucus carota</i> , <i>Launaea procumbens</i> , <i>Ageratum conyzoides</i> , <i>Convolvulus arvensis</i>
<i>Sphaerophoria Indiana.</i>	<i>Citrus medica</i> , <i>Ziziphus jujuba</i> , <i>Eucalyptus camaldulensis</i> , <i>Acacia nilotica</i> , <i>Melia azedarach</i> , <i>Melilotus indica</i> , <i>Parkinsonia aculeata</i>
<i>Eristalinus aeneus</i>	<i>Citrus medica</i> , <i>Ziziphus jujuba</i> , <i>Eucalyptus camaldulensis</i> , <i>Acacia nilotica</i> , <i>Melia azedarach</i> , <i>Melilotus indica</i> , <i>Parkinsonia aculeata</i>
<i>Eristalinus laetus</i>	Group of plants having, <i>Daucus carota</i> , <i>Launaea procumbens</i> , <i>Ageratum conyzoides</i> , <i>Convolvulus arvensis</i>
<i>Eristalinus arvorum</i>	<i>Spergula arvensis</i> , <i>Cleome viscosa</i> , <i>Pulicaria crispa</i> , <i>Conyza bonariensis</i>
<i>Eristalis tenax</i>	Plantation around the Stagnant water, <i>Parkinsonia aculeate</i> , <i>L. procumbens</i> , and flower plants
<i>Syritta pipiens</i>	<i>Dalbergia sissoo</i> , <i>Medicago sativa</i> , <i>Chrozophora tinctoria</i>
<i>Eristalinus taeniops</i>	Group of plants having, <i>Daucus carota</i> , <i>Launaea procumbens</i> , <i>Ageratum conyzoides</i> , <i>Convolvulus arvensis</i>
<i>Milesia sexmaculata</i>	Group of plants having, <i>Daucus carota</i> , <i>Launaea procumbens</i> , <i>Ageratum conyzoides</i> , <i>Convolvulus arvensis</i>
<i>Eristalis cerealis</i>	<i>Dalbergia sissoo</i> , <i>Medicago sativa</i> , <i>Chrozophora tinctoria</i>
<i>Xylota nursei</i>	<i>Achyranthes aspara</i> , <i>Ageratum conyzoides</i> , <i>Convolvulus arvensis</i>
<i>Ceria dimidiatipennis</i>	Group of plants having, <i>Daucus carota</i> , <i>Launaea procumbens</i> , <i>Ageratum conyzoides</i> , <i>Convolvulus arvensis</i>

In this study the species of Syrphid flies were collected from different habitats. The similar results were reported by (Sajjad et al., 2010) conducted a study about Seasonal Variation in Abundance and Composition of Hoverfly Communities in Multan, Pakistan. Population dynamics and specie composition

of hoverflies in relation to biotic and a- biotic factors were studies over a year. In this study a walk was done in a forest focused on different plant species each were selected randomly. Each plant was observed for 15 minutes and recording syrphid visitation at floral units. The result indicated that hoverflies community was composed of 14 species representing two subfamilies and 11 generas.

Taxonomic distribution of Syrphid flies larvae (Maggots) in Pakistan is not reported. Yet, lots of faunistic studies have been conducted to record species diversity of adult Syrphid flies from different parts of the Pakistan.

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