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Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.aygrt.isrj.org

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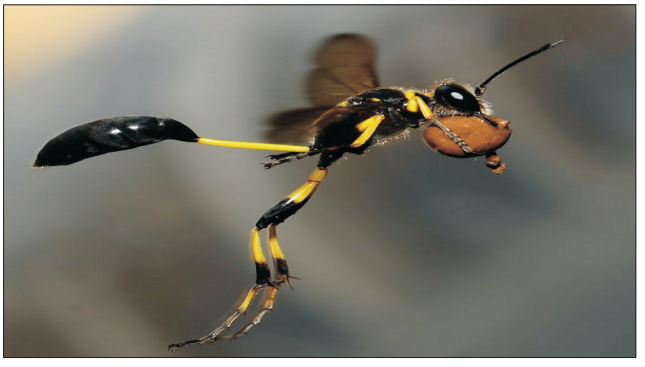
PRELIMINARY STUDY OF FLYING INSECTS IN WASHIM REGION OF MAHARASHTRA, INDIA

Dahatre R. S., Patil P. S. and S. G. Chhaba
P.G. and Research Department of Zoology, R. A. Arts,
Shri M. K. Commerce and Shri S. R. Rathi Science College, Washim, Maharashtra.

ABSTRACT

Insects are the most diverse group of animals on the planet, including more than a million described species and representing more than half of all known living organisms. Flying insect is one of the major insect orders and is of considerable ecological and human importance. Flies are important pollinators. Flies are distributed worldwide, which has profound impacts on ecosystem. The present study is a consolidated account of the flying insect fauna based on literature records and collections. An attempt has also been made to examine the diversity of the true flies within the Washim district. This data can be seen as parameter health of biodiversity of the concerned vicinity and reported 12 species of flying insects belonging to 11 families.

KEYWORDS: *Flying insects, Washim,*



Diptera.

INTRODUCTION

Insects are the most diverse group of animals on the planet, including more than a million described species and representing more than half of all known living organisms. The number of extant species is estimated between six and ten millon and potentially represent over 90% of the differing animal life forms on Earth. Insect may be found is nearly all environment, although only a small number of species reside in the oceans, a habitat dominated by another arthropod group ,crustaceans. The name Flies (commonly known as true flies) was originally assigned by Aristotle and adopted by Linnaeus in 1744. True flies are insects of the order Diptera, the name being derived from the Greek*di* = two, and *ptera* = wings. Insects of this order use only a single pair of wings to fly, the hind wings being reduced to club-like balancing organs known as halteres. Flies are a large order containing an estimated 1,000,000 species including house-flies, crane flies, hoverflies and others, although only about 150,000 species have been described. The flies are most widespread species and have practically a cosmo-politan distribution. They live on excrement, garbage and other rotting and decaying organic material with a high concentration of saccharides. Adult flies have sucking the mouthparts, which permit them to consume only liquids. They dissolved some solid material with their saliva **Pawar (2013).** The life cycle of insect vary but most hatches from eggs. Insect's growth is constrained by the inelastic exoskeleton and development involves a series of molts. The immature stages can differ from the adults in structure, habit and habitat and can include a passive pupal stage in those groups that undergo 4-stage metamorphosis. Insect can undergo 3-stages metamorphosis lack a pupal stage and adult develop through a series of nymphal stages. Female lay up 150 eggs, which soon hatch into headless larvae **Bidau (2014).** They pass through three developmental stages, separated by molting,

lasting about nine to fourteen days, after which the cocoon,they buried themselves in the top most layer of soil . Females mate again shortly after laying eggs so that within two month a female can lay upto 1000 eggs **Theron (2005).**

During the day, flies are mainly gathered on or around feeding and breeding places, where mating and resting also take place **Dadmal and Khadakkar (2014).** Their distribution is greatly influenced by their reactions to light, temperature, humidity, and surface colour and texture. The preferred temperature for resting is between 35°C and 40°C. Oviposition, mating, feeding and flying all stop at temperatures below15°C. Flies are most active at low air humidities. Scientist estimate that survival of over 80% of plant species depend directly on pollinating insect and more specifically on bees **Mitra *et al.*, (2007).** Any major decline of the pollinating insects population would have a dramatic impact on biodiversity and related economic activities, beacuse they are sensitive to their environment, bees are also considered as as major indicators which makes it relevant to see them as an emblam for biodiversity. Preserving bees will therefore benefit all kinds of pollinating insect, animals and people.

Sathe *et al.*, (2013) studied on Diversity of dipterus Forensic insects from western Maharashtra, India in which 25 insect species of forensic importance have been reported belonging to the 12 families. **Mitra *et al* ., (2015)** Carried out the study of flying insects in the state of Himachal Pradesh, of India from Western Himalaya region, in which they studied 503 dipteran species, a total of 175 species from suborder Nematocera and 328 species from suborder Brachycera are reported. **Dadmal and khadkkar (2014)** studied the insect fauna collected towards the light trap at Akola vicinity of Maharashtra,the Investigation was undertaken to know the species composition of insects in which they found 19 species of scarab beetles belonging to 10 genera were found to be the prominent visitors for both the years. **Harinath *et al.*, (2014)** studied Insect diversity at Sri Lankamalleswara reserve forest , Kadapa in the Eastern Ghats of Southern Andhra Pradesh during the period from June 2013 to September 2014 in which they studied nearly 135 species of different types of flying insect species. A detailed study of local resting places is essential for successful control. The present study is carry out to study the different species of flying insect in Washim region and its relationship with humans at ecological level. It is important to describe the basis of arthopods of public health importance. A detailed study of local resting places is essential for successful control. There is need to study biodiversity of flying insect in Washim region, as there were not previous records of Flies and their diversity from this region.

MATERIALS AND METHOD

The techniques used for Flying insect study was visual search, hand collection, handpicking, aerial netting and trapping. Six sampling sites of different habitat types were selected for the present work. These sites include Ekburji dam area of Washim, Padma Tirth area of Washim, PDKV (Dr. Panjabrao Desmukh Krushi Vidyapith) and Lakhala area, Sonkhas site and R. A. collage Washim, these sites are abbreviated as EDW, LAW, PTAW, PDKV, RAW and SSW respectively. Flying insects are collected in early hours by different trap nets and direct hand collection by proper sampling bottles. As insects attract towards light sources, the collection was done near the lamp posts/street lights in the various sites lying in the development area. Apart from this a few attempts were also made to use the light trap. Soft bodied insects like Lepidoptera were gently removed from the bottom of the bag, after it becomes enclosed in the bag by a rapid twist of the handle. All flying insects were preserved in the formalin. The easiest way is just by hand collection of species in sample of glass jar bottles and transparent polythene pockets which is helpful for collections **Gupta *et al*.,(2011).**

All collected Flying insects were identify by using the standard identification key of *www.insectidentification.org also www.biodevercityexplorer.org* while some species are identify by using photographs and available literature and research paper.

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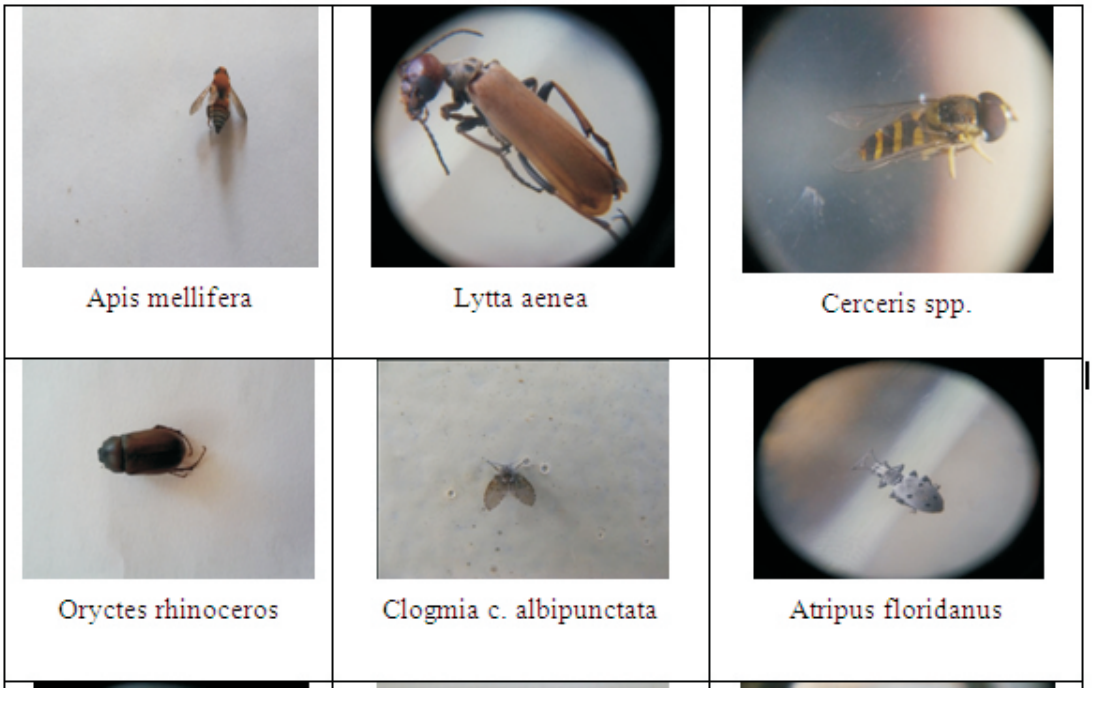
RESULTS AND DISCUSSION

Table I: Flying insects of Washim Region.

Sr. no.	common name	Class	Order	Family	Genus	Species	occurance season
1	Honey bee	Insecta	Hymenoptera	Apidae	Apis	mellifera	All month
2	Blister beetle	Insecta	Coleoptera	Meloidae	Lytta	aenea	Sept-oct.
3	Weevil wasp	Insecta	Crabronidae	Crabronidae	Cerceris	spp.	Aug-Dec.
4	Coconut rhinoceros beetle	Insecta	Coleoptera	Scrabaeidae	Oryctes	rhinoceros	oct-nov.
5	Drain flies	Insecta	Diptera	Psychodinaecl	Clogmia	albipunctata	Oct Dec.
6	Little leaf notcher	Insecta	Coleoptera	Curculionidae	Atripus	floridanus	Aug- oct.
7	Forage looper moth	Insecta	Lepidoptera	Noctuidoptera	Caenurgina	erechtea	Aug-oct.
8	Field cricket	Insecta	Orthoptera	Gryllidae	Gryllus	pennsylvanicus	Nov-Jan.
9	House fly	Insecta	Diptera	Muscidae	Musca	domestica	All month.
10	Blue banded bee	Insecta	Hymennoptera	Apidae	Amegilla	cingulata	Sept-Jan.
11	Tiger bee fly	Insecta	Diptera	Bombyliidae	Xenox	tigrinus	Oct-Feb.
12	Mosquito	Insecta	Diptera	Cullicoidea	Aedes	communis	All month.

Photoplate I: Flying insects of Washim Region



 Caenurgina erechtea	 Gryllus pennsylvanicus	 Musca domestica
 **Atripus floridus**	 **Xenox tigrinus**	 **Aedes communis**

Flies are highly adaptive insects and their larvae develop successfully in a very wide range of media. Most larvae of Diptera are scavengers and contribute to the decomposition of organic material, which in turn, provide nutrient for plants and support for healthy ecosystems and clean environments. Their divers feeding habits to have insightful impact on ecosystem and the Earth as a whole . They provide varied ecosystem services **Jadhav and Sathe (2015).** The present study of flying insect diversity of Washim district was investigated over a period of 5 month that is September 2016 to January 2017. The specimens were collected from Ekburji dam area of Washim, Padma Tirth area of Washim, PDKV (Dr. Panjabrao desmukh krushi vidyapith) and Lakhala area, Sonkhas site and R.A. college campus Washim. Total 12 flying insect species were Observed and collected to the different family. Seasonal and habitat wise variation in the occurrence has been observed. Relatively low flies is found in the given study area, it does not mean that the habitat studied the no Conservation importance.

A detailed study of local resting places is essential for successful control. The presence of these species suggests that the study area might have abundant flying insect diversity .However it is suggested that the diversity flying insect in this area should be studied exclusively. A long term study is needed to observe the species occurred all season and their interaction with the environment changes. Different habitat types in Washim should also be studied for better results. It may result in the collection of more flying insect species from varied habitats which would indicate considerable flying insect diversity in the region. The total species were observed and collected tabulated in **Table I and Photoplate I.** Of total flying insect species 2 common species, 3 beetles,4 bees,1 cricket and 1 moth,1 drain flies respectively.

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Dahatre R. S.
P.G. and Research Department of Zoology, R. A. Arts, Shri M. K. Commerce and Shri S. R. Rathi Science College, Washim, Maharashtra.