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STUDY OF DRAGONFLY DIVERSITY FROM WASHIM REGION OF VIDHERBHA MAHARASHTRA, INDIA

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ABSTRACT

Dragonflies, Damselflies (Order - Odonata) are one of the most common insects flying over forest, agriculture fields, wetlands and rivers. Out of about 6000 species known all over the world, Odonata fauna of India is known by 3 sub order 17 Families 139 genera and 499 species. Studies from different parts of the world have shown that insects like odonates are good indicators of ecosystem health. The present study reveals a total of 13 species of odonates pertaining 12 genera and 3 families from Washim region of Maharashtra. Libellulidae was the most dominant family represented by 9 species followed by Gomphidae family consist of 2 species and Aeshnidae family consist of only 1 species. The objective of the present study is to explore the Odonates diversity in Washim



region of Maharashtra, which helps to encourages the conservation of wide range of dragonflies in this area.

KEYWORDS: Odonates, Dragonflies, Washim region, Biodiversity.

INTRODUCTION

Information on diversity and distribution of various taxa at habitat, local and regional scale is the key to biodiversity conservation. Specially of little known taxa such as odonata (dragon flies). Odonates are aquatic insects and are highly specialized for a specific wetland habitat. Studies from different parts of the world have shown that insects like odonates are good

indicators of ecosystem health. The species assemblages of odonates are influenced by aquatic and terrestrial vegetation. Since larvae and adult odonates respond to change in habitat quality, they are widely recognized indicator for monitoring wetland health. Dragonflies are primitive insects, belonging to order-odonataa name which refers to the large teeth-like mandibles of both larva and adult. In India the odonata contains two suborder that is the damselflies (Zygoptera) and the dragonflies proper (Eiproctophora or Anisptera). Out of about 6000 species known all over the world, Odonata fauna of

India is known by three sub order seventeen Families 139 genera and 499 species. The most dominant family in India is the Libellulidae followed by coenagrionidea. Other major families in India include cordulegasteridae, Gomphidae, cordulidae and Aeshnidae. The odonates have strong association with water because of their aquatic larvae. Dragonflies have been extensively used as indicators of environmental quality in aquatic ecological units, Dragonflies are key organism of the food web as predators both as larvae and as imagoes they usually have definite habitat preference and territorial behavior. Odonates is ecologically important as both predators and prey. In India, Odonata status gives valuable insight about ecosystem health specially of wetland. They are among the dominant invertebrates predators in any ecosystem **Neog**

and Rajkhowa (2016).

Wankhade et al., (2012) studied effect of Water Pollution on Assemblage and Community Structure of Dragonfly at three Ecosystems of Pune (India) which yields valuable information of dragonfly availability at three mentioned ecosystems of Pune. **Bora and Meitei (2014)** studied odonates (Dragonflies and Damselflies) of Indian Council of Agricultural Research (ICAR), Research Complex for NEH Region Campus, Umiam, Meghalaya, India and they conducted the total of 33 species of Odonates were recorded from the study area. **Kanaujia et al., (2015)** was studied on Diversity of Odonates (Dragonflies and Damselflies) and Lepidopteron (Butterflies) Fauna of Nawabganj Bird Sanctuary, Unnao District, Uttar Pradesh, India and they found Odonates and Lepidopteron in this landscape are poorly known due to lack of surveys. **Saha and Gaikwad (2014)** studied on Diversity and abundance of Odonata in parks and gardens of Pune city and they recorded 1113 individuals belonging to 33 species. The abundance and species richness tends to increase with increase in size of the park, presence of large and perennial water sources, good aquatic vegetations, etc.

Dragonflies are playing importance role in ecosystem. Ecologically, they are key to food chains, and as voracious aquatic predators, and also as terrestrial predators and so help to control insect populations. They also serve as indicators of ecosystem quality. For humans, they add to the wonder of nature, and even are a minor food source in some cultures. Odonates are predatory in nature, but also a good source of energy to different animals, specially for birds and other insects such as spiders. Odonates are the important link between aquatic and terrestrial ecosystem changes in aquatic communities such as mowing of shoreline vegetation or introduction of aquatic exotic species reduce the quality of odonates habitat. Odonates are important indicators of water quality and pollution levels. The present study is carried out to estimate the occurrence and changes in the diversity of dragonfly in the ecosystem and also understand various species of dragonflies of Washim region.

MATERIALS AND METHODS:

Washim is located in the eastern region of Vidherbha known earlier as Vatsagulma. The various sites of Washim region was selected for the study, it included Ekburji dam, PDKV Panjabrao desh mukh Krushi vidyapith Malegaon road, farm area near akola road, Mangrulpir, Budhe baba sansthan chandhai, tq-Mangrulpir, and R. A. College garden Washim. The study was carried out monthly during August 2106 to January 2017. Observations were carried out during morning and evening times in all stations. Collection of specimens was done with the help of specially design insect net. Species were photographed and identified in their natural habitats, but in few cases when it is difficult to assess, then it is collected for further identification. Standard methods were used for collection and observations of species. Species were identified with the help of Fauna of British India of Fraser and field guide of Subramanian. Data collection was conducted between 09:00 am and 01:00 pm when insects were most active. Odonates were observed in the field and photographed. The one could not be identified in field were only caught by sweeping net and preserved dry. Photographs of the adults were taken either in field or after preservation and spreading. Odonates were collected for their identification by random. For identification, a key field guide of Subramanian (2005) was used.

RESULT AND DISCUSSION:

Odonates are highly specific to habitat. The Dragonflies observed from the washim region are represented in and photo plate I. The present study reveals a total of 13 species of odonates pertaining 12 genera and 3 families represented in Observation table I. On the basis of number of identified species Libellulidae was the most dominant family represented by 12 species followed by Gomphidae family consist of 2 species and Aeshnidae family consist of only 1 species. The Libellulidae family is the largest family carrying maximum number of species of Dragonflies around freshwater bodies of washim region. *Trithemis festiva* is the most common and most dominant species *Trithemis aurora*, *Brachythemis contaminata*, *Hemianax ochre ephippiger* and *Bradinopyga geminata* are also observe in maximum number. *Diplacodes trivialis*, *Pantala flavescens* and *Cocothemis servilia* were observed in very less number. *Ictinogomphus raphax* which was observed rarely, recently IUCN declare it as an endangered species. Hence there is a great need to study this species for its preservation. **Majumder et al., (2013)** carried out their research on aquatic insect fauna and diversity in which

they also recorded the maximum members of dragonflies belonging to Libellulidae family. Similar results were reported by **Maqbool and Kant (2015)**, **Sahaa and Gaikwad (2014)**, **Saha and Gaikwad (2015)**, **Singh and Banyal (2013)**, **Charajan et al., (2015)**. The high population of *Brachythemis contaminata* species is may be due to contamination of the water bodies. The Odonates features prominently in nature management and they are often used as indicator for environmental health and conservation management. Washim is the well known district in Vidarbha region. There is no data regarding the biodiversity of Dragonflies of this area. The rapid degradation and disturbance of the habitat considered to be crucial to the declining of population of common species. So there is need to have further study about the Odonata diversity.

Any strategy for conserving Odonates, or indeed any group of animals, must contain the various elements that is establishing Protected Areas and ensuring that activities in existing protected areas are managed appropriately for Odonate conservation. Conserving habitats outside protected areas by modifying agricultural, forestry and industrial procedures. Pollution Control. Education and raising public awareness.

Photo plate No. 1 Shows Various Species of Odonates

		
<p>Diplacodes trivialis (Male) Blue percher, green and blue skimmer</p>	<p>Trithemis festiva English-Indigo Dropwing</p>	<p>Trithemis aurora Crimson Marsh Skimmer</p>
		
<p>Erythemis simplicicollis (Male) Eastern pondhawk</p>	<p>Crocothemis servilia Scarlet skimmer (male)</p>	<p>Cocothemis servilia Scarlet skimmer (female)</p>
		
<p>Brachythemis contaminata (female) Ditch jewel, groundlingsa</p>	<p>Brachythemis contaminata (Male) Ditch jewel, groundlingsa</p>	<p>Aphylla angustifolia Broad-striped forceptail</p>

		
Ictinogomphus raphax Common Clubtail	Orthetrum Taeniolactum Taeniolate Marsh Hawk	Acisoma Panorpoides Trumpet tail
		
Hemianax Ochre ephippiger Ochre -tailed	Pantala flavescens Wandering Glider	Bradinopyga geminata Granite ghost

Table No. 1. Observation Shows the Diversity of Order Odonata species.

Sr. No.	Common name	Class	Order	Family	Genus	Species
1	Blue percher, green and blue skimmer	Insecta	Odonata	Libellulide	<i>Diplacodes</i>	<i>trivialis</i>
2	English-Indigo Dropwing	Insecta	Odonata	Libellulide	<i>Trithemis</i>	<i>festiva</i>
3	Crimson Marsh Skimmer	Insecta	Odonata	Libellulide	<i>Trithemis</i>	<i>aurora</i>
4	Eastern pondhawk	Insecta	Odonata	Libellulide	<i>Erythemis</i>	<i>simplicicollis</i>
5	Scarlet skimmer (male)	Insecta	Odonata	Libellulide	<i>Crocothemis</i>	<i>servilia</i>
6	Scarlet skimmer (female)	Insecta	Odonata	Libellulide	<i>Crocothemis</i>	<i>servilia</i>
7	Ditch jewel, groundlings (female)	Insecta	Odonata	Libellulide	<i>Brachythemis</i>	<i>contaminate</i>
8	Ditch jewel, groundlings (male)	Insecta	Odonata	Libellulide	<i>Brachythemis</i>	<i>contaminate</i>

9	Broad-striped forceptail	Insecta	Odonata	Gomphidae	<i>Aphylla</i>	<i>angustifolia</i>
10	Common Clubtail	Insecta	Odonata	Gomphidae	<i>Ictinogomphus</i>	<i>raphax</i>
11	Taeniolate marsh hawk	Insecta	Odonata	Libellulide	<i>Orthetrum</i>	<i>taeniolactum</i>
12	Trumpet tail	Insecta	Odonata	Libellulide	<i>Acisoma</i>	<i>panorpoides</i>
13	Ochre-tailed	Insecta	Odonata	Aeshnidae	<i>Anax</i>	<i>ephippiger</i>
14	Wandering glider	Insecta	Odonata	Libellulide	<i>Pantala</i>	<i>flavescens</i>
15	Granite ghost	Insecta	Odonata	Libellulide	<i>Bradinopyga</i>	<i>geminata</i>

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