



## Seasonal Distribution and Population Dynamics of Aquatic Insects in Ashti Lake ,Dist. Wardha (M.S.)

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### Abstract:

Ashti lake of District, Wardha is a nutrient rich reservoir was investigated to analyze the seasonal abundance and population variation of aquatic insects from January 2010 to December 2012. The study depicts that the insect population was higher during the months of June, September and October. Observed maximum in June, when an average of seven insect were discovered in one ml. of sample. The population density was found to be lower in the remaining months, being lowest in February, March, when on an average only one insect/ml of sample were encountered.

### Key words:

Aquatic insects, Population dynamics, Distribution.

### Introduction:

Insects are dominant macro-invertebrates present in all aquatic environments. Their remarkable adaptability to varied conditions has enabled them to survive and grow in all seasons. Ashti lake of Wardha District is an ideal harbor for the growth and survival of many insect as water of the reservoir is highly productive and support a large number of aquatic plants which provide food ,shelter and protection of the aquatic insects (Bath,1996).This paper describes the seasonal distribution and population abundance of aquatic insects encountered at Ashti Lake of District Wardha.

### Material and methods:

For the study of aquatic insects, surface water samples were collected periodically from January 2010 to December 2012 in a wide mouthed plastic bottle (250ml) tied to a planktonic net. Approximately, 50 liters of water was allowed to pass through the net to collect one sample. Benthic insects were collected by using Ekman's dredge. Insects were also collected from under





the stones, gravels and vegetation by hand picking. The collected insect were preserved in 5% formalin solution and brought to the laboratory for macro and microscopic study. The insect fauna was identified using standard references (Ward and Whipple, 1959; Mallan B. Y., 1963; Pennak, 1978; Tonapi, 1980; Williams and Feltmate, 1992)

## **Results and discussion:**

At Ashti lake, both insect species diversity and population density were found to be high as water is productive and nutrient rich (Bath 1996; Gyllstrom and Hansson, 2004; Chavan and Lonkar, 2012; Sharma et al., 2007; Paul and Nandi, 2003). In total 16 insect genera were encountered from January 2010 to December 2012, (Table 1). These belonged to the orders odonata (nymphs), coleoptera (adults only), Diptera (larvae, pupae and adults), Ephemeroptera (larvae only), Neuroptera (larvae only), Trichoptera (larvae) and Hymenoptera (adults).

The order odonata was represented by nymphs of dragonflies and damselflies. The genera observed were Aeshna sp. and Anax sp. These were encountered during the period of April to July.

The order coleoptera was represented by beetles belonging to the families Dytiscidae and Hydrophilidae. The genera belonging to this order were Dytiscus and Hydrophilus. The beetles were found throughout the year; however population density was more during May to June and August to October.

Order Diptera was represented by larvae and adults of 5 genera. These were larva and adults culex sp., Chironomus sp., Anopheles sp., Tabanus sp., and Anthrax sp., Larva of Culex sp., and chironomus sp. were abundant during January, March, June, and August to November .

Ephemeroptera and Neuroptera were represented by nymphs belonging to 2 genera. The ephemeropteran larvae (Ephemerella sp) were found under the stones and gravels during the colder months of January, February, November, and December. Neuropteran larvae (Corydalus sp) were encountered only during the month of June and July.





Order Trichoptera was represented by larvae of 2 genera Leptocercus and ceraclea sp. These were found in the benthic samples during the months of January , March, November ,and December. Only one adult species of Hymenoptera was encountered at Ashti lake. It was polynemanatance which was found in the month of February and October.

The available data reveal that at Ashti lake, the population density of insects remained higher during the period extending from May to October, the maximum being in June. During the periods of heavy rains ( July and August), the population density declined. Benthic population, consisting mainly of encased trichopteran larvae, was however, more in the months of January and November. Abundance of insects during the summer period was also observed by Munawar (1970), Das (1979), Rai and Datta (1970), and Kaushik et al., (1991). According to Elliot (1967) and Hynes (1970), temperature is the most aparent factor affecting the seasonal cycle of insects. Reduced population density during heavy rains was due to drifting of aquatic insects and there larvae along with strong water current. Similar reasons for low insect population density during rains was given by Kaushik et al., (1991).

### **Conclusion:**

The available data reveal that at Ashti lake, the population density of insects remained higher during the period extending from May to October, the maximum being in June. During the periods of heavy rains ( July and August), the population density declined. Benthic population, consisting mainly of encased trichopteran larvae, however, more in the months of January and November. Abundance of insects during the summer period

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**Table 1.** Aquatic insect fauna of Ashti lake ( 2010 to 2012 )

S. No.	Order	Identified Genera/Species.
1	Odonata	Nymphs of AeshnaspandAnaxsp
2	Coleoptera	Adults of Dytiscussp and Hydrophilussp
3	Hemiptera	Adults of Deronectessp and Hydrometra sp.
4	Diptera	Larvae and adults of chironomous sp., and Anopheles sp., Tabanus sp., Culex sp., Anhorix sp.
5	Ephemeroptera	Larvae of Ephemerella sp.
6	Neuroptera	Lervae of corydalus sp.
7	Trichoptera	Lervaeof Leptocerus sp.And ceraclea sp.
8	Hymenoptera	Adult of Polynemanatans.

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