DIVERSITY OF CHIRONOMIDS (DIPTERA) AND LIMNOLOGY OF KASAR LAKE AT. KILLE-DHARUR DIST. BEED M. S.

R. J. Chavan

Department of Zoology, Dr. Babasaheb Ambedkar Marathawada University Aurangabad, (M. S.) India.

Abstract:

The chironomid larvae commonly called blood worms are considered as indicators of water quality for oxygen content in aquatic systems. As some members are known to inhabit in high quality oxygen rich waters it is important to conduct a taxonomic study of this important group of organisms before using them for environmental research. Therefore, in the present limnological studies the attempt was made to identify the species composition of larval chironomids in Kasar Lake at Kille-Dharurat Dist. Beed, which have experienced eutrophication and then attempt was to know type of relationship to variation of environmental conditions of the lake.

Key wards:- Diversity, Chironomids, Limnology, Kasar Lake

Introduction:

The Chironomidae (Diptera) is a family of small flies whose larval stages makes up over 50% of the benthic macroinvertebrate community. The Chironomids commonly known as non biting midges, constitutes more than 5000 described species, having more to be described. It includes the most diverse group of aquatic insects, including many different feeding groups, habitat preferences, tolerance levels to different environmental conditions and often makes up about one third of the micro-invertebrate fauna of fresh water streams and rivers (Epler, 2001). These insects are only free-living holometabolous insects which have four stages (egg, larva, pupa and adult) in the life cycle. Due to the presence of red blood pigment, haemoglobin, the larvae have the common name "Blood worms". The presence of hemoglobin that stores oxygen permits them to live in anoxic waters. Thus they are used as an indicator to identify the water quality of aquatic systems. Some of the members are known to inhabit in oxygen rich waters it is important to conduct a taxonomic study of this important group of organisms before using them for environmental research. Therefore, the present work was undertake to identify the species composition of larval chironomids in Kasar Lake

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at Kille-Dharur, which is on the way eutrophication and then to know variation in physico-chemical conditions of the lake.

Materials and Methods:

The historic place Kille-Dharur is famous for fort and well planned water conservation and water supply system with number of man made lakes, ponds and baravs. As a result of urbanization these lakes and ponds which are used for washing activities, dumping of solid waste and addition of untreated domestic sewage had under gone the eutrophication. Four different sites considering the addition of type of effluent were identified in Kasar Lake at Kille-Dharur. The larval chironomids were hand sorted from the shore-line sediments and water samples were collected once a month from October 2007 to September 2008 using. The hand sorted larval Chironomids were preserved in 70% ethanol and permanent slides were prepared using standard methods. Each specimen was examined for finite taxonomic features under suitable magnifications of research binocular microscope. Species identification was done using identification manual prepared by Epler (2001), Tonapi, G.T. (1980) etc. The water temperature and pH and transparency of the water was measured using portable meters as per standard methods at the sampling spots. The laboratory analyses of water samples were conducted to analyse Dissolved Oxygen (DO), Alkalinity, Hardness, Chlorides, Phosphates and Nitrates of each water sample obtained from different sites as per standard methods suggested by APHA (1989).

Result and Discussion:

The study of diversity of Chironomids reveals that in Kasar Lake at Kille-Dharur only two subfamilies, namely, subfamily- Chironominae and subfamily-Orthocladiinae were recorded from Kasar Lake at Kille-Dharur. Five species were recorded under subfamily Chironominae and three species from subfamily Orthocladiinae. *Chironomus riparius* was the dominant species in Kasar Lake at Kille-Dharur. The physic-chemical investigations of water samples from Kasar lake shows that pH varies from 7.1 to 8.6 showing alkaline nature of the water. The water temperature varies between 21 to 29 0C, dissolved oxygen is within the range of 3 to 8 Mg./Lit., alkalinity within the range of 325 to 550, hardness within the range of 256 to

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410 Mg./Lit, chlorides within the range of 66 to 130 Mg./Lit, phosphates within the range of 0.8 to 1.5 and Nitrates within the range of 0.9 to 2.0 Mg./Lit. During present study encountered species of Chironomids that respond to environmental conditions in aquatic ecosystem. The results of physico-chemical investigations of the Kasar lake and diversity of the chironomids in the lake shows that the water body on the way of degradation due to eutrophication resulting due to addition of untreated domestic sewage. These results are in agreement with Santokh Singh and Maheshwari Girish (1993), Harbhajan Kaur (2004) Tristen S. Gardner (2007) etc.

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