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BENTHIC MACROINVERTEBRATE AND AQUATIC INSECTS OF CHALBARDI LAKE, TEHSIL BHADRAWATI, DISTRICT CHANDRAPUR (M.S), INDIA.

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Abstract

Benthic macroinvertebrates are bottom dwelling organisms without backbones, which are visible to the eye without use of a microscope they are living in all types of aquatic environment like rivers, streams, ponds, lakes etc. Most of the aquatic insects live in side water in their aquatic larval stages. They often found on, under or around rocks, vegetation, logs and sticks or burrowed into the bottom sand and sediments. In this regard's benthic macroinvertebrate and aquatic insects of Chalbardi lakes, Bhadrawati were studied.

Benthic macroinvertebrates are commonly used as indicators of the biological condition of waterbodies. Macroinvertebrates play crucial role in aquatic ecosystem as they are major food sources for higher trophic levels. Benthic Macroinvertebrates were studied by viewing their potential degree of pollution. In lake side areas the aquatic organisms like coleopteran, Dytiscidae (Predaceous diving beetle Cybister spp.), Gyrinidae (Whirling beetles) and aquatic hemipterans, Belostomidae (Giant Water bug), Nepidae (Water scorpion), hydrometra, Rantara and others were found. The occurance of dipteran larvae like Chironomus larvae in the lake sediments point out towards the presence of organic pollution

in the lake basin. From the sediments of the lake as well as from submerged plants the molluscan species were recorded.

KEYWORDS: Benthic, macro-invertebrates, Ghotnimbala lake, aquatic insects, Bhadrawati.

Introduction

The benthic organisms serve as bioindicator of environmental pollution as they are constantly exposed to different kinds of pollutants in lakes and streams.The biological condition of water body can bedetermined by the evolution of abundance and variety of macroinvertebrate which are used as indicators of macroinvertebrate. Biological condition is the best indicator of waterbody health. If the chemical and physical components of the waterbody are in good condition it shows biology of a waterbody is healthy In addition to benthic macroinvertebrates, scientists also evaluate algae and fish populations to come up with robust estimates of biological condition. The chemical and physical components of the waterbody are typically in good condition if biology of water body is in good condition. Benthic macroinvertebrate is in large amount in most of the aquatic ecosystem of the world. They are immobile the changes in water and habitat quality are responded by Invertebrate communities

In India researchers such as Gupta (1976), Krishnamoorthi K. P. and Sarkar S. (1979):.Tonapi et. al., (1980), Bhattacharya and Gupta (1991), Biswas et. al. (1995), Malhotra,Y.R., Sharma,K.K. and Thalial, M.R.(1996), Thirumalai (1999), Shivramkrushnan et. al., (2000), Khan and Ghosh (2001), Saha et. al. (2007), Malik et al. (2010) ,Chavhan, R.N. and Lonkar, A.N.(2012) Sharma and Agrawal (2012), Zade and Sitre (2012) have carried out investigations on benthic forms.

In foreign countries the works were mainly done by Pennak, R.W.(1978), Pennak R.W. (1989), Capitulo et al.,(2002), De Pauw and Hawkes (1993), Duran et al., (2003), Hales et al (2002), Hickeys and Clements (1999), Kazanci and Girgin (1998), Kazanci and Dugel (2000), Khamar et al., (2000), Maltby (1991),) Metcalf (1998), Miserandino (2001) and Ravera (2001), Rajan, M.K.(2005), Sharma, K.K. andChowdhary, S.(2011).

After literature survey it was observed that study was not made on Benthic macroinvertebrate and aquatic insects of Chalbardi lake so it was plan to undertake study of Benthic macroinvertebrates and aquatic insects of sediments of lakes.

Materials and Methods

The Chalbardi lake is principal fresh water body of Chalbardi villege and it is situated on the East side of Bhadrawati. The area of Chalbardi lake is spread over 24.3 acres. The depth of water is 17 feet during the monsoon and 5 feet during the summer season. The water of this lake is primary used for washing, bathing, agriculture, fishing activities. In this lake washing cloths is daily activity causing addition of detergents in to lake apart from those washing animals, open defecation decreases water quality.

In the present investigation, the benthic macro-invertebrates were qualitatively studied by taking random samples. Samples with mud were collected by using a scoop from the different sides of lakes and transferred to laboratory as early as possible for further analysis. Suspension of each sample was prepared in water to sort out the organisms in each sampleand then it filtered through a sieve of 0.5 mm. mesh size, the filtered residue was then transferred to the tray and sugar solution (10 gm in 250 ml) was poured in it. Due to increased density, benthic organisms were seen floating on the surface which were collected with the help of forceps and dropper. All the organisms were preserved in70 % Alcohol. Then identification and classification is done using standard literature viz. Edmondson, (1959); Pennak(1978), Vazirani (1984) and Thirumalai et. al. (1998),Naidu, (2005). The aquatic insects were collected using a net and transferred to laboratory for identification. The molluscs were collected in live condition and preserved in the laboratory in formalin.

RESULT AND DISCUSSION

The presence and abundance of habitat of macro invertebrates and aquatic insects is specific and narrow, restricted to particular places and vary year to year.Their presence helps to indicate relative degree of purity or pollution of water.Therefore, macroinvertebrate were studied to determine degree of pollution in that area.

It has been found that lakeside area is successfully associated with different aquaticinsects. The aquatic insects like mayflies, water bugs, walking sticks found on the surface of water. In the literal zone water scorpion found to clinging to aquatic vegetation. In aquatic ecosystem of insects Odonata, dragonflies and damselflies act as top predators for other insects.. The maximum number of insects was noted in winter due to stabilisation of water. In this lake detoriation of water causes due to washing cloths, bathing , washing

animals, agricultural purposes etc. still some species of aquatic insects were found, species of hemiptera and coleoptera of the genera Corixa, Corisella, Rantara, Curicta, Cercotmetus, Bellostoma, Gerris, Hydrometa, Notonecta, Cybister, Laccotrephes, and others were found. In lake water in the region of the organic pollution done due to dead and decaying vegetation of macrophyte the dipteran larvae viz. Chironomus were found. The occurrence of these larvae is indicators of receiving rich organic waste and presence of organic pollution in lake water.

The presence of Molluscs eg. Lymnaea columella, Lymnaea luteola, Alasmidonta viridis indicates the lake is polluted and is rich in dead and decomposed organic matter and also due to human activities like addition of substances containing nitrates and phosphates, washing clothes, defecation by local residents on lake side causing environmental pollution. The study results a rich biodiversity comprising of 2 species of annelida, 5 species of mollusca and a large number of aquatic insects viz. 9 species of floating and 4 species of bottom dwelling organisms. If such type of degradation of water continuously going on causing to loss permanently such beautiful water source potential.

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Table 1

Diversity of Benthic Macroinvertebrates and Insects in the Chalbardi Lake of Bhadrawati Tehsil of Chandrapur District (M.S.)

Group	**Benthic Macroinvertebrates and Insect Species Recorded in Lake water and Sediments during Winter Season**
Annelida *Class: Oligochaeta*	*Haemopsis spp.*
	Lumbricusterrestris
Arthropoda *Class :Insecta*	*Corixaspp*
	Belostoma spp.
	Cybisterspp
	Chironomous larva
	Culex larva
	Dineutusspp
	Gerris spp.
	Gyrotalpaspp
	Hydrometra spp.
	Ranatra spp.
	Sigara spp.
	Notonecta spp.
Mollusca ***Class :Gastropoda***	*Alasmidontaviridis*
	Lymnaealuteola
	Pila globose
	Zonitoidesnitidus,
	Cornuaspersum