



## STUDIES ON DIVERSITY OF BENTHIC MACRO INVERTEBRATE FAUNA OF RIVER ERAI NEAR CHANDRAPUR, MAHARASHTRA, INDIA

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**ABSTRACT:** The benthic macro invertebrates can be used as a barometer of overall biodiversity in the aquatic ecosystem. In the productivity of lotic ecosystem, the importance of bottom fauna as a link in the energy flow from primary productivity to fish yield has been stressed by many workers. The present work reports the results of an intensive study on the diversity of macro benthic invertebrate fauna in river Erai near Chandrapur, Maharashtra, India. The present piece of work was carried out from October 2012 to September 2013 for one year. During the period of investigation total 28 macro invertebrate species were recorded.

**Key words:** - Benthic macro invertebrates, Erai, Chandrapur, Maharashtra.

### INTRODUCTION:

Water and life have an inseparable unique relationship. It is the elixir of life from which all life springs forth is vital for the existence of all living organisms. Rivers are vital and vulnerable freshwater systems that are critical for the sustenance of aquatic life with variability in their physicochemical composition. The interference in the quality and appearance of natural aquatic resource has not only posed a serious threat to the existence of civilization but also to the existence of flora and fauna. The ubiquitous and sedentary nature of benthic macro invertebrates (Rosenberg and Resh, 1993), as well as their measurable responses to ambient conditions and exposure over time (Wells et al., 2002), facilitates their use as important environmental indicators in aquatic ecosystem monitoring. In India, number of rivers studied with respect to benthic macro invertebrates (Jayaram, 1995; Arvind Kumar and Singh, 2002; Rajan, 2005; Khan, 2007; Mithani et al., 2012).

### Study area

The lotic ecosystems selected for the study are river Erai near Chandrapur, which is a district headquarter in Maharashtra State and is situated

at 19° 57' N latitude and 79° 22' Longitude at a height of 321.95 M above MSL. The river Erai originates from Chimur Hills in Chimur Taluka of Chandrapur District by means of two tributaries. One of the tributaries known as Chargaon Nullah originates near village Keslabodi and the another tributary known as Chandai Nullah near village Chakparsodi in Chimur Taluka and join near village Arjuni in Warora Taluka and after traveling about 90 kms. Joins river Wardha near village Visapur in Chandrapur District.

### MATERIALS AND METHODS:

Benthic macro invertebrates were collected by Ekman-dredge. The collected bottom sediment brought to laboratory as early as possible. The residue was transferred to an enamel tray and little sugar solution (about 250 ml and sugar 10 gms) was added to it. Due to increase in water density, the benthic organisms floated on surface and were picked up with the help of dropper and forceps and preserved in 70% alcohol and identified using standard keys (Edmondson 1959, Tonapi, 1980 and Naidu K. Vanmala, 2005).

### RESULTS AND DISCUSSION:

Many aquatic invertebrates have specific and narrow habitat requirement and are therefore restricted to places that vary little from year to year. They play a key role in the maintenance of aquatic ecosystem services, mainly in secondary production and energy flow dynamics (Cummins, 1973). Invertebrates are abundant and diverse in most of the aquatic habitats and are relatively easy to sample and analyze. Benthic macro invertebrates have an important influence on nutrient cycle, primary productivity, decomposition and translocation of Material (Wallace and Webster, 1996).

In the present piece of investigation, the benthic macro invertebrates collected consisted of Annelids, Insects, Gastropods and Pelecypodes. Total 28 species from four major groups were recorded. Annelida represented by 07 species, Insecta by 11 species, Gastropoda by 08 species and Pelecypoda by only 02 species. Mithani et al, (2012) reported 11 gastropod species in river Wardha near Rajura bridge in Chandrapur district.

Organisms with narrow level of tolerance are sensitive to even small change in their environment and such species are useful indicator species because changes in their distribution and abundance can be an indication of environmental perturbation such as chemical pollution. Among Annelids *Limnodrilus* and *Dero* species were found in abundance indicating the contaminated status of the ecosystem at sampling site. Purdy (1926) studied the bottom fauna of some polluted rivers and come to the conclusion that *Limnodrilus* prefers an environment of heavy pollution.

Among the insects, *Anopheles* larvae show abundance developing breeding grounds in the stagnant water at sampling site indicating that the species were adapted to polluted habitats. Awolola et al. (2007) observed that *Anopheles* were adapted to wide range of polluted habitats in urban settings in Nigeria. The indicator species

such as *Chironomus tentans* larvae were recorded in abundance indicating the polluted status of the ecosystem at sampling site. The *chironomidae* assemblage level has been a suitable tool for measuring organic pollution in streams, measuring water quality using biotic indices and classifying lake types (Thorne and Williams, 1997, Lunde and Resh, 2012). *Chironomidae* have been important components of bio monitoring programmes worldwide, and they have played a key role in the development of many biological indicators in many countries (Moya et al., 2007, Leniconi et al., 2012).

The molluscs are supposed to be helpful in the purification of water in their capacity as scavengers (Perston, 1915). Harman (1974) was also pointed out the molluscs are bio indicator of water pollution. In this study, Molluscan species shows their dominance by contributing; eight species from the gastropods and two from Pelecypods, in which *Lymnea* and *Melanoid* species were numerically more in this lotic ecosystem. Arvind Kumar (1999) reported *Melania* spp. from Santhal Pargana, Bihar and reported as a good bioindicator of sewage born heavy pollution and hyper eutrophication.

#### CONCLUSION:

The study reveals that presence of indicator species such as *Lymnea*, *Limnodrilus* and *Chironomus* larvae in abundance from river Erai indicating the polluted status of the ecosystem. Anthropogenic use of freshwater for diverse purposes than any other natural resources threatens life supporting aquatic ecosystems so planned development is the only solution available with the developing countries to avoid depletion or degradation of the natural environment.

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