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RESEARCH ARTICLE

Ephemeroptera fauna of river Narmada

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Abstract

Limnological studies on various stations of Narmada River were carried out from Aug-2009 to Feb-2010. The present investigation was carried out to enumerate the biodiversity of ephemeroptera fauna throughout various stations of Narmada River. During present investigation, 17 species comprising of 6 families were recorded including Baetidae, Caenidae, Ephemeridae, Heptageniidae, Ephemerellidae and Leptophlebiidae. The dominant family was Baetidae of which Baetis simplex was the most common species. Baetiella ladakae was also recorded in dominance in the specific station. Maximum biodiversity of ephemeroptera were noted in post monsoon season.

Introduction

Narmada is considered one among the important rivers of the India. Its basin extends over an area of 98,796sq Km and lies between east longitudes 72o 32" to 81o 45" and north latitudes 21 o 20" to 23o 45". Narmada River is rich in aquatic fauna but due to increase in the pollution, the biodiversity of this river goes down day by day and we are losing one species every year.

The Ephemeroptera (May fly) is one of the important order of insects which are true ballerinas of insect world. Ephemeroptera Nymphs are highly susceptible to pollution and thus are important indicators of water quality. Ephemeropterians requires high quality water for their existence. Thus biologists have used their presence or absence in coordination with the numbers present at particular location in a stream or river, to develop several indices of water quality. There are about 3000 species within 37 families in this order (Brittain and Sartori, 2003). The immature forms of Ephemeroptera are aquatic and the greater diversity of Ephemeroptera is found in warm rivers and streams. Adult Mayflies do not feed and live only from 1-2 hours to 14 days (Elliott and Humpesch, 1983). Ephemeroptera are hemimetabolous and are often multivoltine or semivoltine, although in temperate regions univoltinism is predominant. Ephemeroptera are important fish food items in all of their life stages nymphs, subimagos and imagos.

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Material and Methods

Macro benthos (Ephemeroptera) study was carried out for a period of seven months from Aug. 2009 to Feb. 2010 at various sites of Narmada River. The Ephemeroptera samples were collected with surber sampler (at shallow profundal zone) following Wetzel (1983) and with hand net. Samples were preserved in 10% alcohol solution. Samples were returned back to laboratory and later sorted and picked up using low power scanning lens. Information regarding their habitat, vegetation, topography of the area was also recorded. The identification of Ephemeroptera was done as per the methods of Nidham and Nidham (1998), Subba-Rao (1993), Pennak (2004), Tonapti (1980) and Welch (1998) APHA (2002).

Result and Discussion

The distribution has been reported to be dependent on the availability and distribution of preferably food

items. In fact their capacity to exploit areas with optimum food supply might be explained by their abundance. During the present investigation carried out at various sites for Ephemeroptera, 17 species comprising of 6 families were recorded including Baetidae, Caenidae, Ephemeridae, Heptageniidae, Ephemerellidae and Leptophlebiidae.

List of species collected from the sampling station

Name of Families	**Species**
Baetidae	*Baetiella ladakae*
	Baetis solangensis
	Baetis simplex
	Baetis festivus
Caenidae	*Caenidae picea*
	Clypeocaenis bisetosa
Ephemeridae	*Ephemera nadinac*
	Ephemera fulvata
	Ephemera indica
	Eatonigenia trirama
Ephemerellidae	*Ephemerella indica*
Heptageniidae	*Epeorus gilliesi*
	Epeorus psi
	Heptagenia nubila
	Heptagenia solangensis
Leptophtebiidae	*Atalophlebia chialhnia*
	Thraulus gopalani

The dominant family was Baetidae of which Baetis simplex was the most common species. Baetiella ladakae was also recorded in dominance at some specific sites. But their maximum population was recorded in the station like Omkareshwar. In the present study heavy pollution load was observed during raining months. However the maximum population of Ephemeroptera was observed from October to January.

Many May fly species especially among the Baetidae, display considerable life cycle plasticity, being able to change the number of generations per year in response to changes in temperature. The timing of May flies (Ephemeroptera) emergence also frequently depends on temperature (Brittain 1980) and earlier emergence is likely in many Mayflies. Such emergence has been observed maximum in the Khalgat and Koteshwar region of the Narmada River.

The population density of Ephemeroptera gets decreases in the period of post monsoon. Oliver (1960) explained that this be due to sudden inflow of water from the catchment area of water inlet/ outlet system. If present which might have washed away the sediments, nutrients and the bottom appeared to be sand instead of usual organic mud of soft clay of texture. The maximum population of Ephemeroptera family was observed in summer season. Micheal (1968), Dutta and Malhotra (1986) and Malhotra et al (1996) reported the positive correlation between Ephemeroptera and temperature.

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