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Diversity of Benthic Macro invertebrates Fauna of River Narmada at Mandleshwar (M.P.)

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Abstract

Fluctuations in population abundance are called population dynamics. Population dynamics means variety and variability of organisms in the aquatic environment. (Dave, V. 2008). The macro-invertebrates are the most valuable indicators of environmental quality in aquatic ecosystem because of stable mode of life, their convenient size and distinct characters which offers an easy sorting and identification of these organisms (Krishnamoorthi and Sarkar 1979).Macro-I nvertebrates community response to environmental changes are useful in assessing the impact of municipal, industrial and agricultural waste and impact of other land uses on surface water. The macro-invertebrates are highly popular as pollution indicators. (Sharma, S. et al 2008). During the study period 7 species of Oligochaeta, 10 species of insect, 11 species of Gastropoda and 8 species of Pelecypoda were recorded.

Key words : Water Quality, Benthic Macro invertebreates, water quality, pollution indicators

Introduction

The organisms' lives on bottom of water bodies are termed as benthos. The benthos plays an integral part of the food web. It has become an important aspect of limnology. The macro benthic community of an ecosystem be it lentic or lotic. Benthic macro-invertebrate are best indicator for bio-assessment. This biotic environment of water body directly affects in the distribution of population density and diversity of macro benthic community. Benthic fauna are especially of great significance for fisheries. That they themselves act as food of bottom feeder fishes (Sharma, S. 2002). Water is one of the abundantly available substances in nature. It is an essential element of our body and also a factor indispensable to our economic and social

development. It is the basic and primary need for all vital life processes and it is now well established that the origin of life first took place in aquatic environment. There is no doubt that water has largest collection of anomalous properties of any commonly known substance (Sharma, S. 2002).

Material and Methods

Study Area

Mandleshwar is a small town a Nagar Panchayat of Kharhone district in the Indian state of Madhya Pradesh. It is a town of historical and religious importance situated on the bank of Narmada river at a distance of 8 km east from Maheshwar, which was the capital of erstwhile Holkar State and 99km from Indore.

It's Latitude (DMS) 22º10'60"N and Longitude (DMS) 75º40'0"E.

For the collection of samples a hand net, drag net and surber sampler were used and sieving them for isolation. The bigger animal species picked up by hand where as the smaller forms were isolated by sugar floatation method and studied them under low power (x50) microscope. They were preserved by narcotizing them by Methanol and Chloral hydrate and later 70% Alcohol. The benthic organisms were identified with the help of APHA (2002), Willium and Feltmate (1992), Pennak (1989), Tonapi (1980), Needham and Needham (1969), etc.

Result

MACRO-INVERTEBRATES DIVERSITY Of NARMADA RIVER AT MANDLESHWAR REGION DURING 2009-2010

TABLE

Name of group and Species	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
Oligochaeta (/M^2)												
Tubifex tubifex	10	15	20	10	15	20	14	18	**22^**	18	NIL	**5***
Tubifex albicola	NIL	13	19	NIL	13	10	13	17	**20^**	13	NIL	**4***
Limmodrilus hoffmeisteri	3	7	**18^**	3	7	11	7	6	9	5	NIL	**2***
Dero dorsalis	7	9	10	7	9	**15^**	**4***	10	7	5	**15^**	10
Stylaria fossularis	3	5	7	3	5	**10^**	8	7	4	**2***	5	8
Telmatodrilus multispinosus	8	14	**22^**	8	14	12	10	12	13	NIL	NIL	**4***
Branchiodrillus hortensis	8	6	9	8	6	06	9	4	**10^**	7	8	**3***
Insecta (/M^2)												
Baetidae -												
Baetiella ladakae	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Baetis solangensis	NIL	NIL	05	07	11	04	**12^**	09	05	03	**01***	NIL
Baetis simplex	NIL	NIL	03	06	09	**11^**	10	07	05	**02***	**02***	NIL
Baetis festivus	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Caenoidae -												
Caenis sp.	NIL	NIL	06	09	**12^**	10	09	07	06	02	**01***	NIL
Ephemeridae -												
Ephemera nadinae	NIL	NIL	**02***	18	22	**27^**	20	17	12	07	06	NIL
Heptageniidae -												
Epeorus gilliesi	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Heptagenia nubile	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Chironomidae-												
Chironomus chironomus	16	25	30	**37^**	25	17	12	15	12	10	5	**2***
Chaoborus chaoborus	18	22	25	**35^**	28	23	18	**15***	25	19	NIL	NIL

Gastropoda(/M^2)												
Pila globosa	17	26	30	37	30	40	**47^**	39	30	39	40	**12***
Bellamya bengalensis	NIL	NIL	15	19	30	35	**38^**	30	22	19	**10***	NIL
Vivipara bengalensis	NIL	17	30	39	47	**50^**	38	35	30	25	**12***	NIL
Thiara scabra	**10***	17	25	40	45	**50^**	38	30	23	30	14	NIL
Thiara lineate	NIL	NIL	**20***	25	34	45	**56^**	39	30	27	**20***	NIL
Thiara tuberculata	NIL	20	23	34	39	42	**47^**	39	35	29	**18***	NIL
Melanoides tuberculates	**12***	24	28	32	38	**40^**	38	32	30	26	15	NIL
Lymnea acuminate	**15***	20	28	35	39	40	30	**45^**	38	35	25	NIL
Lymnea auricularia	**12***	20	25	39	**45^**	36	39	35	28	25	16	NIL
Digioniostoma pulchella	**8***	24	33	40	35	**47^**	35	32	30	18	12	NIL
Gyraulus convexiusculus	NIL	NIL	15	22	**30^**	19	12	**10***	NIL	NIL	NIL	NIL
Pelecypoda (/M^2)												
Corbicula striatella	**10***	22	25	30	37	**40^**	33	35	30	22	20	NIL
Musculium indicum	NIL	18	22	26	32	37	40	**42^**	35	28	**14***	NIL
Pisidium clarkeanum	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Parreysia caerulea	10	19	27	35	37	**42^**	37	35	27	25	13	**05***
Parreysia favidens	12	17	23	25	29	18	20	35	**42^**	30	**10***	NIL
Lamellidens corrianus	**14***	25	30	37	40	**46^**	35	30	23	17	NIL	NIL
Lamellidens consobrinus	**12***	20	27	32	36	39	**45^**	40	30	20	15	NIL
Lamellidens lamellatus	**12***	18	23	30	32	36	40	**45^**	37	27	19	NIL

NIL = absent, * = minimum, ^ = maximum

Discussion

Andem, A. B. et al (2012) identified ten genera, belonging to three phyla from a total of 518 individuals collected from all the stations from Ona river, South-west, Nigeria.

Nautiyal and Mishra (2012) recorded the arthropod (Class Insecta, Crustacea), mollusc (Class astropoda, Pelecypoda) and annelid (Class Oligochaeta, Polychaeta) elements consisting of 22 taxa constitute the benthic macroinvertebrate fauna of the Ken river. The insects occur in high numbers at all the selected stations, the mayfly (Class Insecta, Order Ephemeroptera) occur in very high numbers in the river Ken.

Habib, S. and Yousuf, A.R. (2012) were recorded 23 taxa of macrozoobenthos in Doodganga streams followed by Khanshah manshah canal with 18 taxa. Arthropoda was found to be the most dominant group, comprising of 23 species followed by Annelida with 1 species. The former was represented by class Insecta (5 orders) and Crustacea (1order). The species rich class Insecta is itself an assemblage of different forms belonging to 5 different orders (Ephemeroptera-2, Diptera-12, Trichoptera-5, Plecoptera-2 and Coleoptera-1). Insecta class was dominated by order Diptera followed by Trichoptera, Ephemeroptera and Plecoptera.

Negi, R.K. and Mamgain, S. (2013) recorded total 31 benthos belonging to three phylum, 4 classes and 10 orders with Insecta emerging as the most dominant class. The most abundant order having maximum genera were coleoptera and odonata with 5 genera followed by ephemeroptera and hemiptera (4 genera), plecoptera and trichoptera (3 genera), Diptera and Decapoda (2 genera) and Megadrilacea and Arhynchobdellida with one each. Sharma, S. et al (2013) reported forty-two species from Kunda river, Khargone (M.P.), India.

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Conclusion

Benthic macro-invertebrates are ecologically important organisms in food webs and are integral componants in establishing tropic structure of an aquatic ecosystem. A remarkable variety and

abundance of macro-invertebrates with the Phylum Annelida (Oligochaeta), Mollusca (Gastropoda and Pelecypoda), and Arthropoda (insecta) were recorded in the river Narmada.

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