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Diversity of Macro invertebrates in Kunda reservoir District Dhar M.P.

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Abstract
The main aim of the present research was study the "Diversity of Macro invertebrates in Kunda reservoir District Dhar M.P." There are 36 species of Zoobenthos and other fauna were identified from the entire four studied site *viz;* Rajrajeshwar temple, Outlet channel, Kunda village and Feeder channel during 2012 (January 2012- December 2012). There are 6 species of Phylum Arthropods (Class- Crustacea) were identified, there are 10 species of aquatic insects were identified which belongs to different family. Macrozoobenthic invertebrate are diverse group of long lived species that react strongly to human influences in aquatic ecosystem. However, now a day, a macrozoobenthic invertebrate based biotic index has been proposed to evaluate water quality in freshwater river streams.

Keywords: zoobenthos, macro invertebrates, benthic invertebrate and primary producers

Introduction
The benthic macro invertebrate's fauna are associated with bottom or any solid liquid interface. It includes a heterogeneous assemblage of organisms representing various invertebrate phyla and others. The benthic macro invertebrate's organism has an important position in the reservoir ecosystem, functions as a link between primary producers, consumer, decomposers and higher trophic levels (Pandit, 1980) [6].

Benthic invertebrate's fauna play an important role in key phenomena within reservoir ecosystems such as productivity, food chain dynamics, nutrient cycling and decomposition (Reice & Wohlenberg, 1993) [8]. Benthic invertebrates act as an link between primary producers, detrital deposits and higher trophic levels in aquatic food webs. Therefore, any changes in reservoir environment, such as in mineral concentrations, would be reflected by changes in the structure of the benthic invertebrate community (Carvalho *et al.*, 2002) [2]. It means that benthic invertebrates may indicate eutrophication but in addition several other modes of reservoir degradation may also occur.

Macrozoobenthic invertebrate are diverse group of long lived species that react strongly to human influences in aquatic ecosystem. However, now a day, a macrozoobenthic invertebrate based biotic index has been proposed to evaluate water quality in freshwater river streams (Bhat and Pandit, 2010) [1]. Looking to importance of Macrozoobenthic invertebrate the present investigation "Diversity of Macro invertebrates in Kunda reservoir District Dhar M.P." was undertaken.

Material and Method
Benthic samples were collected from all four (Rajrajeshwar temple, Outlet channel, Kunda village and Feeder channel) sampling stations using a Vanveen grab of 0.6 m^2 surface area. The sediment sample collected were kept in a polythene bags, labelled and brought to the laboratory for analysis. The benthos were sorted out into different groups and preserved in 4% phosphate buffered formalin in small glass jars. Finally, they were identified by a stereoscope microscope using the guides of Macan (1959) [5], Edmunds (1978) [3] and Pennak (1978) [7].

Result and Discussion
There are 36 species of Zoobenthos and other fauna were identified from the entire four studied site *viz;* Rajrajeshwar temple, Outlet channel, Kunda village and Feeder channel during 2012 (January 2012- December 2012). There are 6 species of Phylum Arthropods (Class- Crustacea) were identified, there are 10 species of aquatic insects were identified which belongs to different family. The family Chironomidae includes two species namely; *Chironomus* species *and Chaoborus* species. Whereas, Baetidae is represented by *Baetis festivus, Baetis simplex* and *Baetiella* species. The family Heptageniidae consists of *Epeorus* species *and Heptagenia nubile.* However, *Caehis* species and *Ephemera* species belongs to the family Caenoidae and Ephemeridae respectively. The Class Oligochaeta (Phylum Annelida) includes 8 species namely; *Tubifex- tubifex, Dero digitata, Dero cooperi, Branchiodrillus hortensis, Limnodrilus hoffmeisteri, Tubifex albicola, Stylaria fossularis* and *Dero dorsalis.* Whereas, Gastropoda (Phylum Mollusca) are represented by *Pila globosa, Vivipara bengalensis, Bellamya bengalensis, Thiara scabra, Thiara lineata* and *Digiostana pulchella*. The Class- Pelecypoda (Phylum Mollusca) consists of 7 species namely; *Lamellidens consobrinus, Lamellidens lamellatus, Lymnea auricularia, Lymnaea acuminate, Melanoides tuberculates, Corbicula striatella and Lamellidens corricaunus.* The *Cyclopes* and *Daphnia cercinata* (Crustacea), *Chironomus* species (Chironomidae),

Baetis simplex and *Baetiella* species (Baetidae); and *Ephemera* species (Ephemeridae) were found to be dominant in all the four studied site. However, *Stylaria fossularis (*Oligochaeta) and *Melanoides tuberculates (*Pelecypoda) were found to be least abundant group. Results of the present study also in agreement with the finding of previous authors Sharma *et al*. (2010, 2012 and 2013) [9-11].

Table 1: Showing relative abundance of Zoo benthos and other fauna available in studied sites during one year (January 2012- December 2012).

Sr. No.	Phylum	Class	Scientific Name	Rajrajeshwar temple	Outlet channel	Kunda village	Feeder channel
1.	Arthropods	Crustacea	*Prawn*	+ + +	+ +	+ + +	+ +
2.			*Nauplius*	+ + +	+ + +	+ + +	+ + +
3.			*Cypris*	+ ++	+ ++	+ ++	+ ++
4.			*Cyclopes*	+ +++	+ +++	+ +++	+ ++
5.			*Daphnia cercinata*	+ +++	+ +++	+ +++	+ +++
6.			*Pina dubia*	++	++	++	++
7.	Annelida	Oligochaeta	*Tubifex tubifex*	+ +	+ ++	+ +	+ ++
8.			*Dero digitata*	+ +	+ +	+ ++	+ +
9.			*Dero cooperi*	+ +	+ +	+ +	+ +
10.			*Branchiodrillus hortensis*	+ ++	++	+ ++	++
11.			*Limmodrilus hoffmeisteri*	+ ++	+ ++	+ ++	+ ++
12.			*Tubifex albicola*	+ +	+ + +	+ +	+ + +
13.			*Stylaria fossularis*	+	+	+	+
14.			*Dero dorsalis*	++	++	++	++
15.	Mollusca	Gastropoda	*Pila globosa*	+ ++	+ ++	+ ++	+ ++
16.			*Vivipara bengalensis*	++	++	++	+
17.			*Bellamya bengalensis*	+ ++	++	+ ++	++
18.			*Thiara scabra*	+ ++	+ ++	+ ++	+ ++
19.			*Thiara lineata*	+ ++	+ ++	+ ++	+ ++
20.			*Digiostana pulchella*	+ ++	+ +	+ ++	+ +
21.		Pelecypoda	*Lamellidens consobrinus*	+ +	+ +	+ +	+ +
22.			*Lamellidens lamellatus*	+ +	+ +	+ ++	+ +
23.			*Lymnea auricularia*	+ +	+ +	+ +	+ +
24.			*Lymnaea acuminate*	+ +	+ +	+ +	+ +
25.			*Melanoides tuberculates*	+	+	+ ++	+
26.			*Corbicula striatella*	++	++	+ ++	++
27.			*Lamellidens corricaunus*	++	++	+ ++	++
	Class	Family					
28.	Insecta	Chironomidae	*Chironomus sp.*	+ + ++	+ + ++	+ + ++	+ + ++
29.			*Chaoborus sp.*	+ ++	+ ++	+ ++	+ ++
30.		Baetidae	*Baetis festivus*	+ ++	+ ++	+ ++	+ ++
31.			*Baetis simplex*	+ + ++	+ + ++	+ + ++	+ + ++
32.			*Baetiella sp.*	+ + ++	+ + ++	+ + ++	+ + ++
33.		Heptageniidae	*Epeorus sp.*	+ +	+ +	+ ++	+ +
34.			*Heptagenia nubile*	+ ++	+ ++	+ ++	+ ++
35.		Caenoidae	Caehis sp.	+ + +	+ + +	+ + +	+ + +
36.		Ephemeridae	*Ephemera sp.*	+ +++	+ +++	+ +++	+ +++

+ + + + =Dominant, + + + =Most Abundant, + + =Abundant, + =Least abundant

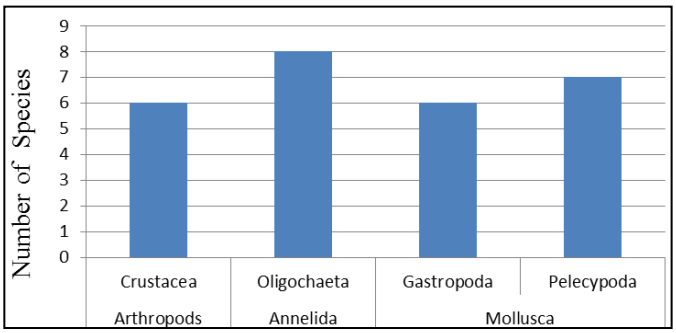

Fig 1: species of Zoobenthos in studied sites during one year (January 2012- December 2012)

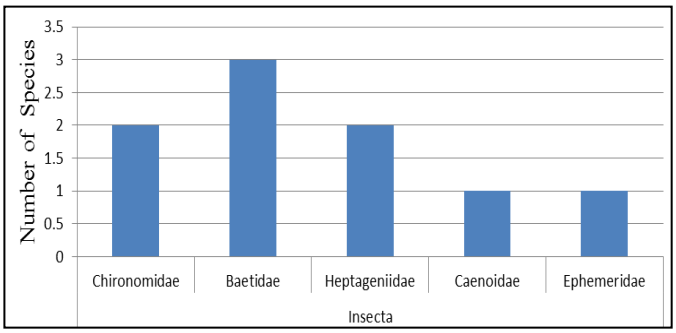

Fig 2: number of species of insects in studied sites during one year (January 2012- December 2012)

Conclusion

Benthic macro invertebrate communities have strong potential because they are indicators of lake condition. It is important to understand and monitor the littoral invertebrate contribution to ecosystem dynamics, especially those of high-elevation, oligotrophic lakes and reservoirs.

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