Vol 4 Issue 11 Dec 2014

ISSN No : 2230-7850

International Multidisciplinary Research Journal

Indian Streams Research Journal

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RNI MAHMUL/2011/38595 **ISSN No.2230-7850**

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Indian Streams Research Journal
ISSN 2230-7850
Impact Factor : 3.1560(UIF)
Volume-4 | Issue-12 | Jan-2015
Available online at www.isrj.org

STUDY ON ZOOPLANKTON FAUNA AND SEASONAL VARIATION IN BHIMA RIVER NEAR GURSALE VILLAGE, DIST: SOLAPUR, (MAHARASHTRA).

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Abstract:-During present investigation total 18 Zooplankton species were recorded from Bhima river near Gursale village Taluka Pandharpur, Dist. Solapur (M.S) from Jan. 2014 to Dec.2014. Which consist of 9 Species belong to Rotifera, 5 species belong to Cladocera, 4 species belong to Copepoda, The Rotifera was the most dominant group throughout the Study period. The number of Zooplankton was highest in summer followed by winter and lowest in Monsoon Season. The Zooplankton variation were observed as follows Rotifera > Copepod > Cladocera in Study Period. All Three zooplankton groups were observing in throughout study period.

Keywords: Zooplankton, Bhima River, Pandharpur, Density.

INTRODUCTION

Rivers are freshwater aquatic habitat for plants, animals and play important role in maintaining high biodiversity. The zooplanktons are microscopic animal and found in fresh water and marine water bodies. The change in water quality of river is depends upon biotic and abiotic factors. The Zooplankton is important component of the ecological pyramid of the fresh water ecosystem. Zooplanktons are occupying a central position between Phytoplanktons and fish. The monitoring of zooplankton communities is needed to allow us to predicatively model the ecosystem and helpful for conservation of river (Saron et.al, 2013).Zooplanktons are the integral part of lotic community and contributes the role of aquatic ecosystem. (Patel et.al, 2014). The clearity of water, fluctuation of temperature are depends upon seasonal change in aquatic environment by adding rain water it suitable for growth of zooplankton (Lokhande et. al., 2012).

The zooplankton is wide range of environmental conditions but physicochemical parameters are limiting factors, they also good bioindicators to assess the pollution of any freshwater body (Dutta et.al, 2013). A number of workers have previously reported on different aspects of zooplankton in habiting Indian fresh waters (Shrirame et.al, 2014; Majagi et. al, 2009; Datta. 2011; Kaya et. al. 2006; Joshi 2011). Therefore the aim of the present study is to determine zooplankton fauna and seasonal variation of the study area.

MATERIAL AND METHODS:

Description site: Gursale village is situated in the Solapur district of State Maharashtra. Bhima river is runs near Gursale village. It is situated in latitudes 17^0 71' and 41^0 77'N and longitudes 75^0 31' and 31^0 21'E (Fig. no.1).

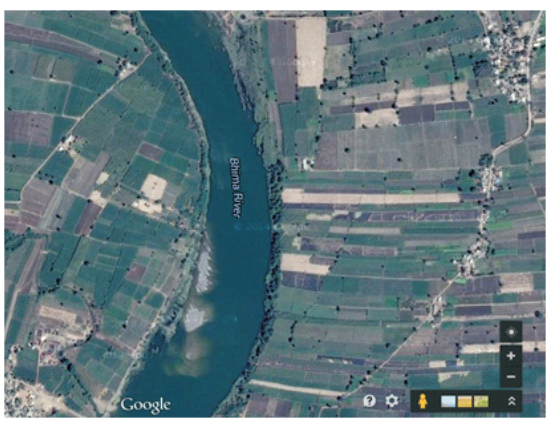


Fig. No-1. Satellite view of Bhima River in Study area.

Collection of Sample: Water sample were collected from Bhima river near Gursale village every month during Jan 2014 to Dec 2014 in the morning between 8 to 11 am. For the collection of zooplanktons sample 50 lit. of surface water passed through standard plankton net of bolting silk No. 25. The collected samples were preserved in 4% formalin solution in 200 ml bottle.

Biological analysis:

The Zooplanktons were identified with the help of standard literature up to generic level by using standard keys of Adoni et al., (1985), Edmondson (1959), Pennak (1978), Reddy (1994), Dhanapathi (2003), Bhouyain et.al. (1992). The qualitative and quantitative analysis of the organism is carried out by 'Sedgwick rafter cell' as per the standard methods APHA (1998). The Average of 5 to 10 counts for each sample is taken in to account and results are expressed in No of organism/lit.

Table No. I: Seasonal Occurrence of Zooplankton density during Study area During Jan 2014 to Dec 2014

Zooplankton species	Summer					Winter					Rainy season				
	Feb	**Mar**	**Apr**	**May**	**Total**	**Oct**	**Nov**	**Dec**	**Jan**	**Total**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
Rotifera															
Brachionus Caudatus	10	15	20	15	60	05	04	03	05	17	10	05	12	05	32
Brachionus falcatus	05	10	10	20	45	15	10	04	10	39	10	10	04	05	29
Brachionus forficula	04	05	06	05	20	10	09	08	10	37	15	05	05	05	30
Brachionus Calyciflorus	10	20	25	20	75	25	10	05	05	45	20	06	06	05	37
Brachionus diversicornis	05	05	10	Nil	20	10	09	10	05	34	10	04	05	03	22
Filinia opolensis	Nil	Nil	O5	Nil	05	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Keratella tropica	10	15	25	20	75	15	10	05	05	35	10	05	03	01	19
Keratella crassa	05	10	15	10	40	03	02	Nil	Nil	05	06	01	02	01	10
Keratella chochlearis	Nil	Nil	05	Nil	05	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	49	**80**	**121**	**90**	**340**	**83**	**54**	**35**	**40**	**212**	**81**	**36**	**37**	**25**	**179**

Cladocera															
Moina micrura	20	25	15	10	70	08	05	03	10	26	10	05	02	01	18
Moina Brachiata	10	15	10	15	50	03	02	02	02	09	05	01	02	05	13
Chydrorus sphaericus	10	20	15	10	55	05	05	02	03	15	02	01	01	01	05
Bosmina longirostris	02	10	05	10	27	10	05	01	Nil	16	03	02	01	02	08
Diaphanosoma sarsi	10	15	10	10	45	05	10	04	01	20	Nil	Nil	07	0l	08
	52	**85**	**55**	**55**	**247**	**31**	**27**	**12**	**16**	**86**	**20**	**09**	**13**	**10**	**52**
Copepoda															
Mesocyclops	25	20	35	30	110	20	15	25	10	70	10	03	03	03	19
Undinula valgaris	20	10	15	10	55	19	14	20	10	63	05	03	02	04	14
Thermocyclops	20	15	20	10	6 5	21	15	14	05	55	10	02	03	05	20
Nauplius	20	25	20	20	85	25	20	15	10	70	15	05	10	05	35
	85	**70**	**90**	**70**	**315**	**85**	**64**	**74**	**35**	**258**	**40**	**13**	**18**	**17**	**88**
Total	**186**	**235**	**266**	**215**	**902**	**199**	**145**	**121**	**91**	**556**	**141**	**58**	**68**	**52**	**319**

RESULT AND DISCUSSION:

The present studies 18species of Zooplankton were recorded. The Zooplankton represented by three groups of Phylum Viz. Rotifera, Cladocera, Copepoda. Rotifera were dominant as compared to other group in the Bhima river. Among, these Rotifera belongs to 9 Species were found as follows, B. Caudatus, B. falcatus, B. forficula, B. Calyciflorus, B. diversicronis, Keratella tropica, Keratella crassa, Keratella chochlearis. Filinia opolensis. Copepoda belongs to 4 species, Mesocyclops, Undinula valgaris, Thermocyclops, Nauplis, Cladocera belongs to 5 species, Moina micrura, Moina brachiata, Chydrous sphaericus, Bosmina longirostris, Diaphanosoma sarsi. Filinia species was present in only summer season only during the present Study period. The seasonal variation of zooplankton groups as follows, Rotifera > Copepoda> Cladocera. The total density of Zooplankton was higher during summer season and Minimum no. of zooplankton recorded in winter and rainy season (Table no. I), similar observation was seen Patel, et.al (2013).

Rotifera: Rotifers are Pseudocoelomate animals and also called as 'Wheel-Bearer'. In present study population density of rotifera was Maximum in April Month 121/ L and Minimum in Sept Month 25/ L. (Fig no.5) similar observation was seen in Ukkadam Lake Coimbatore, Tamilnadu. Ezhili et.al (2013).

Cladocera: Cladocera are small crustacean animals and also called as water fleas. In present study the cladocera population density show Minimum in July 9/L and maximum in March 85/ L, (Fig. no.3), Similar trends observed in Godavari river water near Nashik Maharashtra, Kolhe (2014).

Copepoda: Copepoda are group of small animal found in freshwater and sea water habitat. In present study Population density of copepod was maximum in April 90/ L and minimum was July 13/ L (Fig. no.4), Similar trend observed in urban lake of Nagpur city, Sitre (2012)

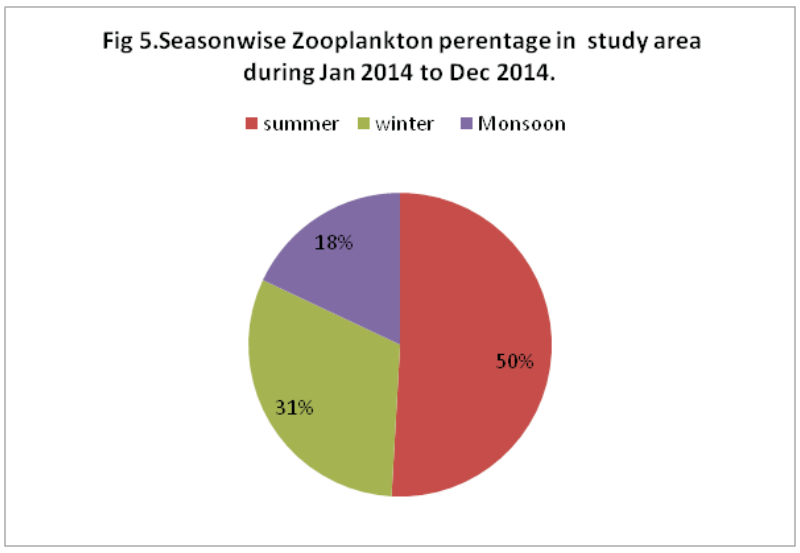
According to Ahmad, et.al, (2013) reported as 28 genera of Zooplankton from Pahuj Reservoir at Jhansi U. p. India. Salve, et.al (2013) reported as 18 genera of Zooplankton from Gangapur Dam of Nashik. Gadekar et.al (2014) reported as 25 genera of Zooplankton in Pangadi lake, Gondia, Maharashtra. During present study the summer season percentage of zooplankton number is 50%, winter season 31%, and rainy season 18% (fig.No.5). Therefore the present studies were helpful for awareness of water pollution and conservation of river.

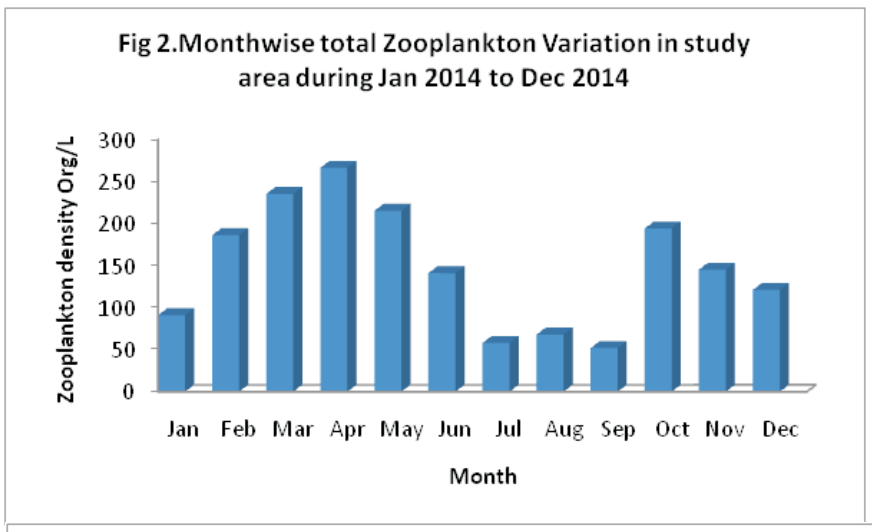
CONCLUSION:

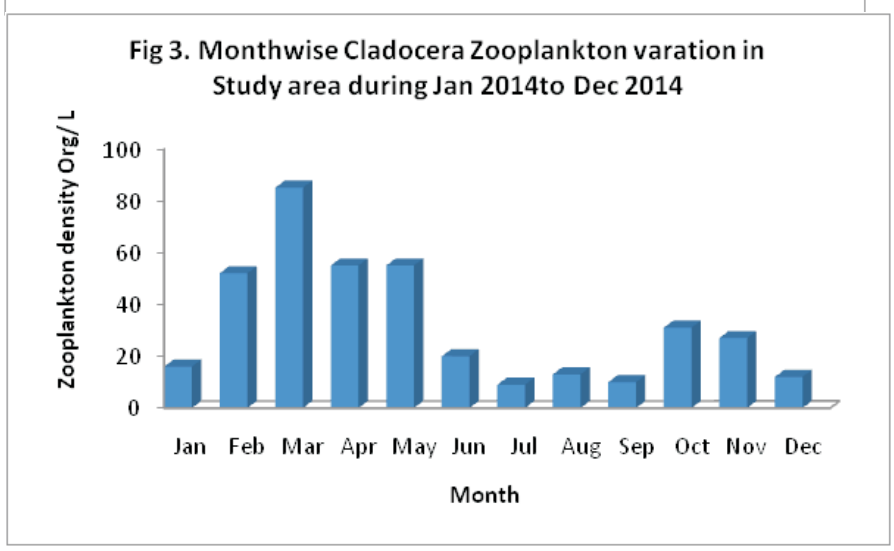
The Zooplankton density was more in summer followed by winter season because favorable environmental condition for growth of Zooplankton. The Zooplankton density was less in rainy season. The river is protecting from domestic waste, agriculture waste, and industrial waste from near village. The river water is clean and maintain aquatic ecosystem in future.

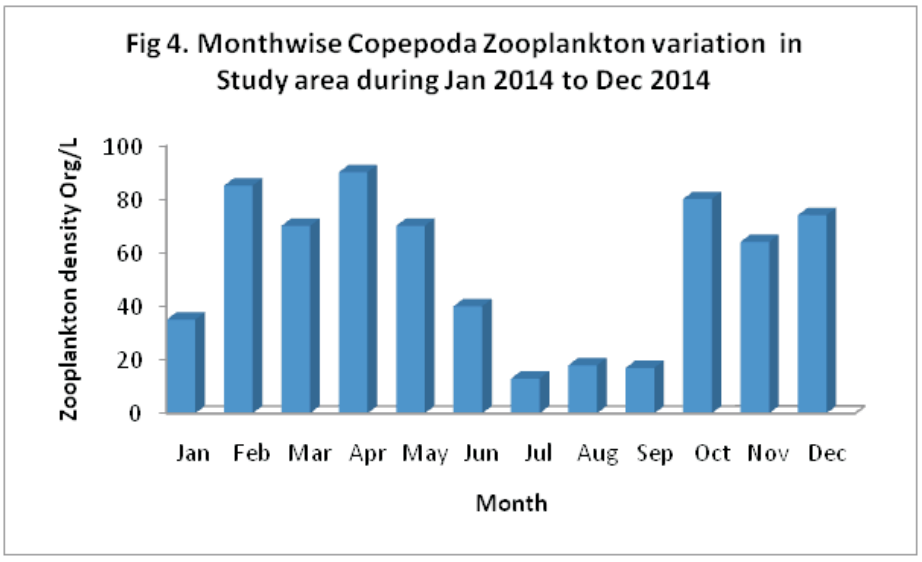
ACKNOWLEDGEMENT:

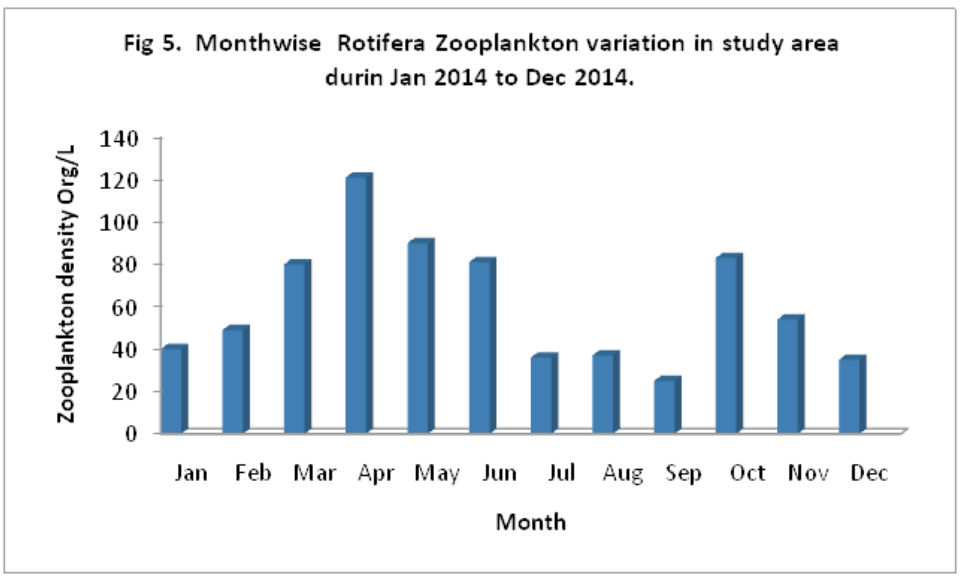
The authors are thankful to Principal and Head of Department of Zoology, Shankarro Mohite Patil Mahavidyalaya Akluj, for providing Laboratory and library facility for the present research work.











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