

RESEARCH ARTICLE

Study of meiozoobenthos present in Kunghada Bandh and Chamorshi Lake, tah. Chamorshi, dist. Gadchiroli, India

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Manuscript Details	ABSTRACT
<p>Received : 29.10.2015 Revised :28.11.2015 Revised received : 04.12.2015 Accepted: 15.12.2015 Published: 31.12. 2015</p> <p>ISSN: 2322-0015</p> <p>Editor: Dr. Chavhan Arvind</p>	<p>The collection and analysis of macrozoobenthos were done once in a month during two years i.e. February 2012 to January 2014. Total of 9 species of meiozoobenthos were observed in Kunghada Bandh lake and Chamorshi Lake belonging from phylum Rotifera and Arthropoda (cladocera, copepods, ostracods). It is concluded that both the Lakes are rich in diversity of meiozoobenthos. Kunghad Bandh lake is shows slightly more quantity of meiozoobenthos as compare to Chamorshi Lake, due to fair quality of water.</p> <p>Keywords: Meiozoobenthos, Chamorshi Lake, Kunghada Bandh, Gadchiroli.</p>
<p>Cite this article as: Tijare RV and Kunghadkar GE. Study of meiozoobenthos present in Kunghada Bandh and Chamorshi Lake, tah. Chamorshi, dist. Gadchiroli, India, <i>Int. Res. J. of Science & Engineering</i>, 2015, 3(6):237-242.</p> <p>Copyright: © Author(s), This is an open access article under the terms of the Creative Commons Attribution Non-Commercial No Derivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p>1. INTRODUCTION</p> <p>Most of the benthic fauna are the important indicators of water quality that indicate the past and current environmental and ecological status of an aquatic ecosystem (Hynes, 1960; 1962). The term "Meiofauna" was derived from Greek word that means "smaller fauna" for the benthos of muddy substratum. On the basis of their size Mare (1942) was the first who coined the term 'Meiobenthos'. The size of meiozoobenthos varies from 100 micron to 1000 micron. The number and biomass of meiobenthos are analysed by Anderson and Anne-Marie De Henau (1979). Meiozoobenthos plays an important role in the secondary production as well as in the degradation of organic matter (Evgeny, 2002).</p> <p>Kunghad Bandh lake and Chamorshi Lake are situated at 20.22°N-80.01°E and 19.55°N - 79.52°E respectively. The samples were collected monthly for the period of two years (February 2012 to January 2014) and categorized them according to their</p>

seasons e.g. 15th February to 15th May-Summer, 15th June to 15th September-Monsoon and 15th October to 15th January-Winter.

MATERIALS AND METHODS

Benthic organisms were collected from all possible stations in the white plastic tray by using Ekman's dredge and Van-Vin grab. Both the dredge are of medium size (6" X 6" X 6"). Samples were collected during 10 am to 12 pm. and analyzed in the same day to avoid any error. The meiozoobenthos were observed and identified with the help of light microscope and then snapped by Nikon coolpix L 29. The identifications or qualitative study were done by using various keys such as Dahms (1993), Thorp and Covich (1991), Peenak (2004; 2007; 2009). For the quantitative analysis, benthic samples are first of all filtered through 1000 micron mesh size by pouring some water and then actual number of meiozoobenthic species was counted with the help of Sedgewick-Rafter Scale. Their density is counted in terms of individuals (N) per M² and calculated by using the formula

$$\frac{N}{M^2} = \frac{N}{A} \times 10^4$$

RESULTS AND DISCUSSION

Total 9 species of meiozoobenthic species belonging to Phylum-Rotifera and Arthropoda were observed in both the lakes during the investigation period from all possible sites. Out of 9 species of meiobenthos three species were of Rotifers i.e. *Brachionus calcyflorus*, *Keratella tropica*, and *Keratella quadrata* from Family-Brachionidae, six species were of Arthropods belonging to the Order- Cladocera i.e. *Ceriodaphnia* from Family- Daphniidae and *Bosmania longirostris* of Family- Bosmiinidae. From Copepoda the species identified were *Cyclops* from Family- Cyclopidae and *Diaptomus* from Family- Diaptomidae. From Ostracoda, species *Stenocypris major* and *Cypridopsis vidua* of Family- Cyprididae, were observed during the collection of benthic organisms.



Fig. 1 :View of Kunghada Bandh



Kunghada Bandh



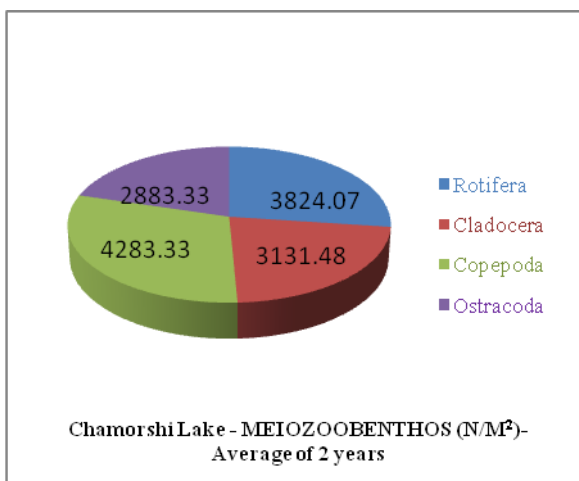
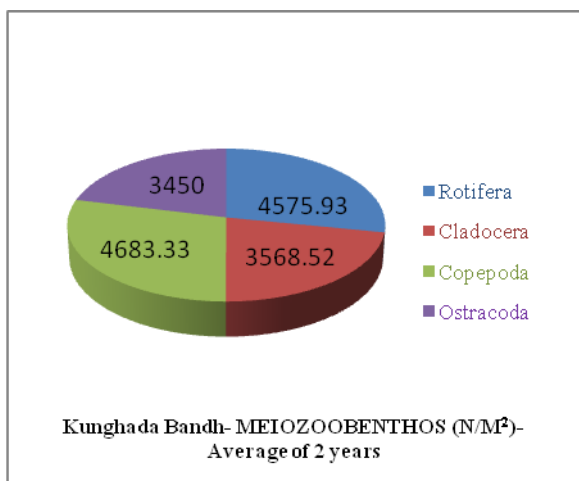
Fig. 2: Map of Chamorshi Lake

Table 1: KUNGHADA BANDH-Analysis of MEIOZOOBENTHOS (N/M²) observed during February 2012 to January 2014 (Average of 2 years)

Phylum	Genus &	SUMMER (N/M ²)				MONSOON (N/M ²)				WINTER (N/M ²)			
Class,Order	species	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Phy-Rotifera	Total=	4533.33	3933.33	3577.78	3200	3866.67	4733.33	5577.78	6200	5444.44	4711.11	4822.22	4311.11
Cla-Eurotatoria	<i>Brachionus calyciflorus</i>	1666.67	1555.56	1288.89	1222.22	1422.22	1688.89	2000	2266.67	2288.89	1933.33	1622.22	1666.67
Ord-Ploima	<i>Keratella tropica</i>	1377.78	1088.89	1022.22	1000	1200	1488.89	1622.22	1800	1622.22	1377.78	1555.56	1311.11
Fam-Brachionidae	<i>Keratella quadrata</i>	1488.89	1288.89	1266.67	977.78	1244.44	1555.56	1955.56	2133.33	1533.33	1400	1644.44	1333.33
Phy-Arthropoda	Total=	12022.2	11022.2	9666.7	8466.7	8866.7	10177.8	11422.2	12800	14311.1	15088.9	13911.11	12666.7
Cla-Branchiopoda	Order-Cladocera	3688.89	3555.56	3044.44	2600	2800	2955.56	3200	3911.11	4466.67	4688.89	4222.22	3688.89
Fam-Daphniidae	<i>Ceriodaphnia</i>	1711.11	1466.67	1222.22	1066.67	1333.33	1488.89	1666.67	1933.33	2222.22	2466.67	2222.22	1888.89
Fam-Bosminidae	<i>Bosmina longirostris</i>	1977.78	2088.89	1822.22	1533.33	1466.67	1466.67	1533.33	1977.78	2244.44	2222.22	2000	1800
Cla-Maxillopoda	Subclass-Copepoda	4888.89	4444.44	4000	3600	3466.67	4000	4511.11	4888.89	5488.89	6044.44	5666.67	5200
Ord-Cyclopoida	<i>Cyclops sp.</i>	2644.44	2355.56	2155.56	1933.33	1711.11	2022.22	2311.11	2577.78	2888.89	3177.78	3022.22	2800
Ord-Calanoida	<i>Diaptomus sp.</i>	2244.44	2088.89	1844.44	1666.67	1755.56	1977.78	2200	2311.11	2600	2866.67	2644.44	2400
Cla-Ostracoda	Total=	3444.44	3022.22	2622.22	2266.67	2600	3222.22	3711.11	4000	4355.56	4355.56	4022.22	3777.78
Ord-Notostraca	<i>Stenocypris major</i>	1844.44	1666.67	1466.67	1222.22	1377.78	1644.44	1911.11	2155.56	2355.56	2355.56	2133.33	1955.56
Ord-Podocopida	<i>Cypridopsis vidua</i>	1600	1355.56	1155.56	1044.44	1222.22	1577.78	1800	1844.44	2000	2000	1888.89	1822.22
Total Number of species(N/M²)=		16555.6	14955.6	13244.4	11666.7	12733.3	14911.1	17000	19000	19755.6	19800	18733.3	16977.8

Table 2: CHAMORSHI LAKE-Analysis of MEIOZOOBENTHOS (N/M²) observed during February 2012 to January 2014 (Average of 2 years)

Phylum	Genus &	SUMMER (N/M ²)				MONSOON (N/M ²)				WINTER (N/M ²)			
Class,Order	species	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Phy-Rotifera	Total=	3666.67	3355.56	3200	3177.78	3355.56	4111.11	4488.89	4933.33	4177.78	3777.78	4066.67	3577.78
Cla-Eurotatoria	<i>Brachionus calyciflorus</i>	1111.11	911.111	888.89	1111.11	1088.89	1377.78	1555.56	1755.56	1244.44	1222.22	1466.67	1222.22
Ord-Ploima	<i>Keratella tropica</i>	1155.56	1022.22	1088.89	977.78	1000	1244.44	1311.11	1466.67	1355.56	1177.78	1222.22	1111.11
Fam-Brachionidae	<i>Keratella quadrata</i>	1400	1422.22	1222.22	1088.89	1266.67	1488.89	1622.22	1711.11	1577.78	1377.78	1377.78	1244.44
Phy-Arthropoda	Total=	9777.8	9022.2	8377.8	7755.6	8511.1	9933.3	11088.9	12111.1	12488.9	12066.7	11844.4	10733.3
Cla-Branchiopoda	Order-Cladocera	2844.44	2600	2466.67	2244.44	2888.89	3177.78	3577.78	3822.22	3977.78	3622.22	3266.67	3088.89
Fam-Daphniidae	<i>Ceriodaphnia</i>	1555.56	1400	1400	1333.33	1733.33	1933.33	2133.33	2266.67	2288.89	2066.67	1866.67	1755.56
Fam-Bosminidae	<i>Bosmina longirostris</i>	1288.89	1200	1066.67	911.11	1155.56	1244.44	1444.44	1555.56	1688.89	1555.56	1400	1333.33
Cla-Maxillopoda	Subclass-Copepoda	4311.11	4000	3533.33	3355.56	3177.78	3977.78	4466.67	4955.56	4888.89	5200	5066.67	4466.67
Ord-Cyclopoida	<i>Cyclops</i>	2066.67	1933.33	1688.89	1533.33	1600	2022.22	2333.33	2644.44	2422.22	2466.67	2311.11	2133.33
Ord-Calanoida	<i>Diatomus</i>	2244.44	2066.67	1844.44	1822.22	1577.78	1955.56	2133.33	2311.11	2466.67	2733.33	2755.56	2333.33
Cla-Ostracoda	Total=	2622.22	2422.22	2377.78	2155.56	2444.44	2777.78	3044.44	3333.33	3622.22	3244.44	3511.11	3177.78
Ord-Notostraca	<i>Stenocypris major</i>	1133.33	1022.22	1066.67	1044.44	1155.56	1311.11	1422.22	1600	1755.56	1555.56	1511.11	1355.56
Ord-Podocopida	<i>Cypridopsis vidua</i>	1488.89	1400	1311.11	1111.11	1288.89	1466.67	1622.22	1733.33	1866.67	1688.89	2000	1822.22
Total Number of species(N/M²)=		13444.4	12377.8	11577.8	10933.3	11866.7	14044.4	15577.8	17044.4	16666.7	15844.4	15911.1	14311.1



In Kunghada Bandh minimum average of total meiozoobenthos i.e.14105.56 N/M² was recorded in summer and maximum average of total meiozoobenthos (18816.67 N/M²) in winter as compared to the annual average total meiozoobenthos (16277.78 N/M²). In Chamorshi Lake minimum average of total meiozoobenthos i.e. 12083.33 N/M² was recorded in summer and maximum average of total meiozoobenthos (15683.33 N/M²) in winter as compared to the annual average of total meiozoobenthos (14133.33 N/M²). The seasonal fluctuation in meiozoobenthic species were occurs due to quality and quantity of water. Water levels of lakes generally lowers down in summer as compare to monsoon and winter which affects the population of organisms.

Workers like Pekka (1981), Chaurasia and Adoni, (1985), Pawar and Pulle (2005) and Gusakov and Gagarin (2012) reported similar findings and worked on economical importance of benthic organisms in freshwater ecosystems.

In Kunghada Bandh, percentage of Rotifer was 28.11% and 27.08% in Chamorshi Lake. Percentage of cladocera in Kunghada Bandh was 21.92% and 22.17% in Chamorshi Lake. In Kunghada Bandh, percentage of copepods was 28.77%, while in Chamorshi Lake 30.33% respectively. The percentage of ostracods in Kunghada Bandh is 21.20% and 20.42 in Chamorshi Lake.

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