



## ZOOPLANKTON DIVERSITY AND DENSITY IN SOME FRESHWATER BODIES AROUND SATARA (M.S) INDIA

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### Abstract-

The present study deals with the diversity and density of zooplankton of three fresh water bodies from the Satara district. The present work is carried out from June 2012 to June 2013. There are five major groups of zooplanktons namely rotifers > copepods > cladocerans > protozoan > ostracods. The study shows 66 species of zooplanktons where rotifers dominates all other groups.

### Introduction-

Freshwater zooplankton is an important component in an aquatic ecosystem and plays a critical role not only for primary consumers but also serve as source of food for higher organisms. They are primary food for finished and shiel fishes and can be used as indicators of trophic status of water body. Their fluctuations in occurrence and abundance can be used to estimate the fishery potential of a water body. Hutchinson. G. E (1967)

Zooplankton plays a key role in transferring energy from one trophic level to other in the aquatic habitat. Besides, they are also used as biological indicators of trophic status of water body. Their patterns of distribution, periodicity, abundance and growth in different aquatic habitats have been subject to many researchers in India. Nasar. S. A. and Munshi J. S. D.C. (1975).

The Zooplankton community constitutes an important component of aquatic eco-system and many species are suitable as line feed in aquaculture. The knowledge of their abundance, species diversity and special distribution is important in understanding trophodynamic and trophic progression of water bodies. Phytoplankton and Zooplankton undertake a journey from bottom to surface at the approach of darkness. Light intensity is considered the main factor, in addition to other factors like temperature, pressure, gravity and predators to influence this phenomenon. Sreelatha, K. and Rajalakshmi. S. (2005).

They serve as a link between primary & tertiary production (forming major food source). Density of zooplankton is directly correlated with fishery potential. The present study deals with species diversity & density of zooplankton of fresh water bodies at Kas, Kanher & Mahadare reservoir.

### Material and Methods-

The selected reservoirs are located **Kas** (N 17°43'05" 90; E73° 46'42" 61), **Kanher**

(N17° 44' 16" 02; E 73° 53' 43" 10) and **Mahadare** (N17° 40' 58" 43; E 73° 58' 22" 92) reservoir from Satara district. From these reservoirs, water samples were collected for analysis of physico-chemical parameters, diversity and density of zooplanktons. The study was conducted for a period of June 2012 to June 2013.

Zooplankton samples were collected with plankton net at two times mesh size 45 micron & 4% formaline was added to preserve the samples for further studies in the laboratory. The concentration of samples was examined under microscope. They were identified using standard literature such as APHA (1992), Fritsch (1965), Hutchinson (1957), Biswas (1980), and Edmondson (1963). The physico-chemical parameters were studied by using APHA (1992), Trivedy and Goel (1986). The concentration of samples for zooplanktons was collected after filtration of 50 liters of water to make volume 50 ml filtrate in plastic bottle and preserved by using 0.5 ml of formalin, examined under microscope & were counted using Lackey's drop method. Adoni *et al*, (1985).

The density of zooplankton was expressed as organisms per liter using formula  $N = n \cdot v / V$  Where, N= Total number of org. /lit. of water filtered.

N=number of organism counted in 1 ml of sample.

v= Volume of concentrated sample. (ml)

V= Volume of total water filtered /lit. (ml)

### Result and Discussion-

Similar type of work has been reported by no. of workers. Hujare (2005) reported absences of any seasonal trend in ostracods on the basis of their work on Talsande & Attigare reservoir. Pawar and Pulle (2005) recorded 60 species of zooplankton from Prthwadaj dam of Nanded. Pai and Berde (2005) reported 48 & 50 species of zooplankton from Sadoba pond of Kolhapur district and Santacruz Lake from Goa respectively. Kamble and Meshram (2005)

recorded 11 species of zooplankton from Khatijapur tank from Amaravati district. Pailwan et al., (2008) recorded 35 species of zooplanktons from 3 fresh water Tanks of Kolhapur. Rajagopal et al., (2010) recorded 47 species of zooplanktons in Chinnapperkovil pond, 39 sp. in Nallanchettipatti pond & 24 in Kadabamkulam pond of Tamilnadu. Shaikh et al., (2010) recorded 26 species of zooplanktons in fresh water bodies

around Aurangabad. The rotifers are usually small microscopic pseudocoelomate animals which have been variously regarded as a separate phylum. It was dominating group as species of rotifers were recorded highest in the summer (mg/l) at Mahadare and lowest at in rainy season at Kas reservoir. The density of Zooplankton is highest at Mahadare reservoir as compared with two other water bodies.

**Table. 1.** Diversity of zooplankton in three reservoirs

Sr.no	Plankton recorded	Sr.no	Plankton recorded
1	<i>Brachionus angularis</i>	34	<i>Mesocyclops.sp,</i>
2	<i>Brachionus bidentata</i>	35	<i>Mesocyclops leukartii</i>
3	<i>Brachionus caudatus</i>	36	<i>Microcyclops sp.,</i>
4	<i>Brachionus calafertus</i>	37	<i>Nauplius larva</i>
5	<i>Brachionus clayciferus</i>	38	<i>Phyllodiaptomus blanci</i>
6	<i>Brachionus diversicornis</i>	39	<i>Alona sp.,</i>
7	<i>Brachionus durgae</i>	40	<i>Alona pulchella</i>
8	<i>Brachionus falcatus</i>	41	<i>Bosminia sp.,</i>
9	<i>Brachionus forficula</i>	42	<i>Bosminia deiteri</i>
10	<i>Brachionus pallas</i>	43	<i>Bosminia longirostris</i>
11	<i>Brachionus quadridentata</i>	44	<i>Ceriodaphnia cornuta</i>
12	<i>Brachionus rubens</i>	45	<i>Ceriodaphnia laticaudata</i>
13	<i>Euchlanis dilatata</i>	46	<i>Daphnia longirimis</i>
14	<i>Filinia bory</i>	47	<i>Daphnia lumholtzi</i>
15	<i>Filinia terminales</i>	48	<i>Daphnia pulex</i>
16	<i>Filinia longistea</i>	49	<i>Daphnia vosea</i>
17	<i>Keratella bory</i>	50	<i>Diaphnasama excisum</i>
18	<i>Keratella cochleraris</i>	51	<i>Indialona ganapati</i>
19	<i>Keratella procura</i>	52	<i>Monia sp.,</i>
20	<i>Keratella quadrata</i>	53	<i>Monia brachiata jurine</i>
21	<i>Keratella tropica</i>	54	<i>Monia macrocopa</i>
22	<i>Lecane sp.,</i>	55	<i>Monia mirrcura</i>
23	<i>Lecane closterocerca</i>	56	<i>Sida crystallina</i>
24	<i>Lecane hamata</i>	57	<i>Cypris sp.,</i>
25	<i>Lecane luna</i>	58	<i>Cyclocypris globosa</i>
26	<i>Lecane stichaea</i>	59	<i>Stenocypris sp.,</i>
27	<i>Natholca acuminata</i>	60	<i>Amoeba sp.,</i>
28	<i>Polyarthra vulgaris</i>	61	<i>Amoeba radiosa</i>
29	<i>Trichocera porcellus</i>	62	<i>Arcella sp.,</i>
30	<i>Argulus foliceous</i>	63	<i>Diffugia sp.</i>
31	<i>Cyclops sp.,</i>	64	<i>Paramecium sp.,</i>
32	<i>Dioptomus sp.,</i>	65	<i>Trinema sp.,</i>
33	<i>Heleodiptomus vidaus</i>	66	<i>Vorticella sp.,</i>

**Table: 2.** % population of Zooplankton diversity in Kas reservoir

Season	Rotifers	Cladocerans	Copepods	Ostracods
Rainy	42.01%	24.21%	13.87%	2.45%
Winter	42.48%	37.64%	21.69%	1.50%
Summer	59.70%	28.34%	30.99%	2.11%

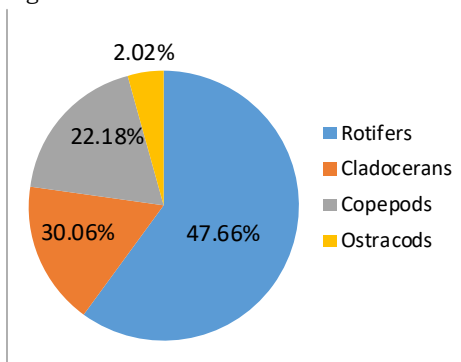
**Table: 3.** % population of Zooplankton diversity in Kanher reservoir

Season	Rotifers	Cladocerans	Copepods	Ostracods
Rainy	50.55%	20.54%	24.49%	4.11%
Winter	40.50%	36.54%	22.27%	1.50%
Summer	55.56%	13.85%	28.51%	2.11%

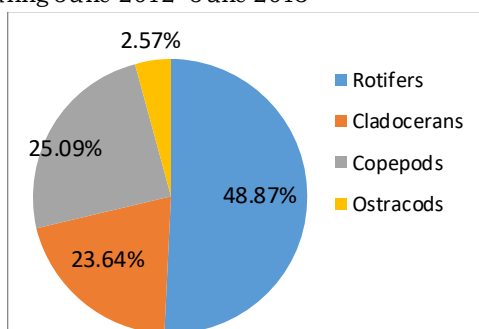
**Table: 4.** % population of Zooplankton diversity in Mahadare reservoir

Season	Rotifers	Cladocerans	Copepods	Ostracods
Rain	56.01%	16.22%	17.17%	4.00%
Winter	43.83%	23.67%	21.40%	1.32%
Summer	64.16%	18.55%	31.03%	4.10%

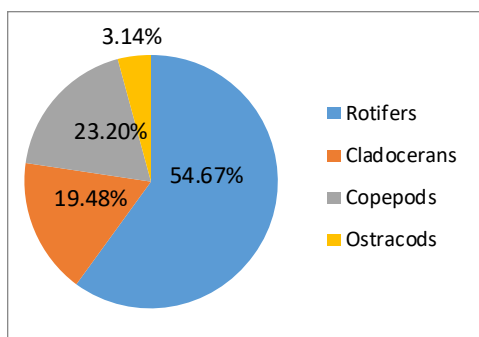
**Figure 1.** Zooplankton diversity of Kas reservoir during June 2012- June 2013



**Figure 2.** Zooplankton diversity of Kanher dam during June 2012- June 2013



**Figure 3.** Zooplankton diversity of Mahadare reservoir during June 2012- June 2013



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