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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 >cladocearans>protozoan >ostracods. The study shows 66 species of zooplanktons where rotifers dominates all other groups.

Keyword: Zooplanktons, Fresh waterbodies, Density and diversity.

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1. Introduction

Freshwater zooplankton is an important component in an aquatic ecosystem ad plays a critical role not only for primary consumers by serve as source of food for higher organisms. They are primary food for finished and sheel fishes and can be used as indicators of tropic status of water body. Their flucations in occurrence and abundance can be used to estimate the fishery potential of a water body. Hutchinson [1]

Zooplankton plays a key role in transferring energy from one tropic level to other in the aquatic habitat. Besides, they are also used as biological indicators of tropic 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 and Munshi [2].

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 tropic 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 and Rajalakashmi [3]. 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.

2. Material & Methods

The selected reservoirs are located **Kas** (N 17º43 05 º 90; E73 º 46 42 º 61), **Kanher** (N17 º 44 16 º 02: E 73 º 53 43 º 10) and **Mahadare** (N17 º 40 58 º 43: E 73 º 58 22 º 92) reservoir from Satara district. From these reservoirs, water samples were collected for analysis of physic-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 [4] and Biswas [5]. The physico- chemical parameters were studied by using APHA [4], Trivedy and Goel [6]. 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. [7].

The density of zooplankton was expressed as organisms per liter using formula N= n*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)

3. Result and Discussion

Similar type of work has been reported by no. of workers. Hujare [8] reported absences of any seasonal trend in ostracods on the basis of their work on Talsande & Attigare reservoir. Pawar and Pulle [9] recorded 60 species of zooplankton from Prthwadaj dam of Nanded. Pai and Berde [10] reported 48 & 50 species of zooplankton from Sadoba pond of Kolhapur district and Santacruz Lake from Goa respectively. Kamble and Meshram [11] recorded11 species of zooplankton from Khatijapur tank from Amaravati district. Pailwan, et al. [12] recorded 35 species of zooplanktons from 3 fresh water Tanks of Kolhapur. Rajagopal, et al. [13] recorded 47 species of zooplanktons in Chinnapperkovil pond, 39 sp. in Nallanchettipatti pond & 24 in Kadabamkulam pond of Tamilnadu. Shaikh, et al. [14] 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	Brachionus angularis	34	Mesocyclops.sp,
2	Brachionus bidentata	35	Mesocyclops leukartii
3	Brachionus caudatus	36	Microcyclops sp.,
4	Brachionus calafertus	37	Nauplius larva
5	Brachionus clayciforus	38	Phyllodiaptomus blanci
6	Brachionus diversicornis	39	Alona sp.,
7	Brachionus durgae	40	Alona pulchella
8	Brachionus falcatus	41	Bosminia sp.,
9	Brachionus forficula	42	Bosminia deiteri
10	Brachionus pallas	43	Bosminia longirostris
11	Brachionus quadridentata	44	Ceriodaphnia cornuta
12	Brachionus rubens	45	Ceriodaphnia laticaudata
13	Euchlanis dilatata	46	Daphnia longirimis
14	Filinia bory	47	Daphnia lumholtzi
15	Filinia terminales	48	Daphnia pulex
16	Filinia longistea	49	Daphnia vosea
			Continue

17	Keratella bory	50	Diaphnasama excisum
18	Keratella cochleraris	51	Indialona ganapati
19	Keratella procurca	52	Monia sp.,
20	Keratella quadrata	53	Monia brachiata jurine
21	Keratella tropica	54	Monia macrocopa
22	Lecane sp.,	55	Monia mircrura
23	Lecane closterocerca	56	Sida crystallina
24	Lecane hamata	57	Cypris sp.,
25	Lecane luna	58	Cyclocypris globosa
26	Lecane stichaea	59	Stenocypris sp.,
27	Natholca acuminate	60	Amoeba sp.,
28	Polyarthra vulgaris	61	Amoeba radiosa
29	Trichocera porcellus	62	Arcella sp.,
30	Argulus foliceous	63	Diffugia sp.
31	Cyclops sp.,	64	Paramecium sp.,
32	Dioptomus sp.,	65	Trinema sp.,
33	Heleodiaptomus vidaus	66	Vorticella sp.,

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%

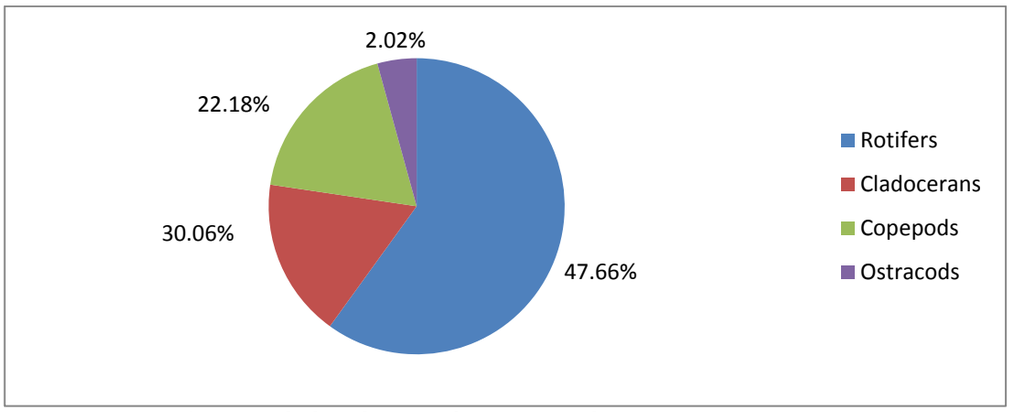

Fig-1. Zooplankton diversity of Kas reservoir during June 2012- June 2013

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%

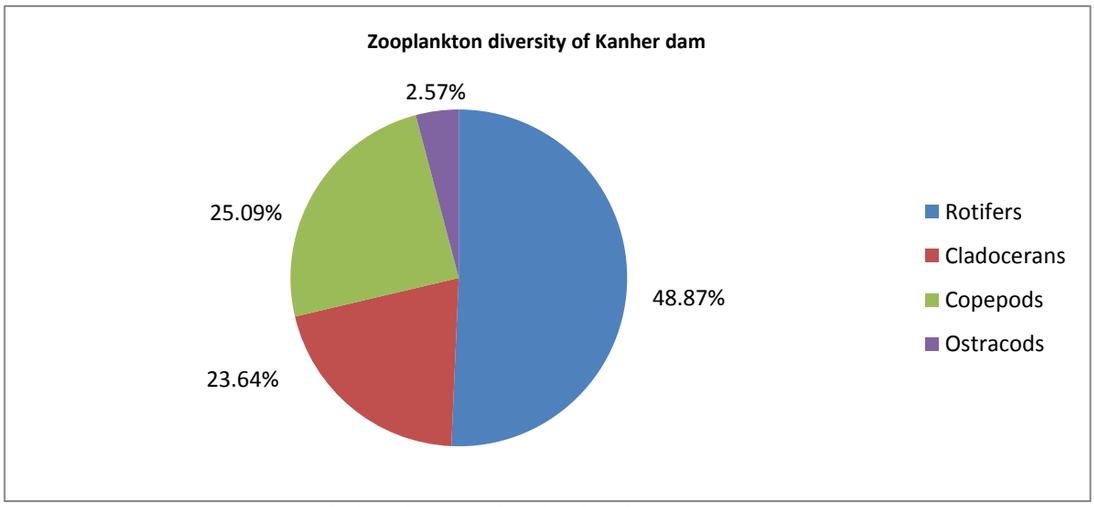

Fig-2. Zooplankton diversity of Kanher dam during June 2012- June 2013

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%

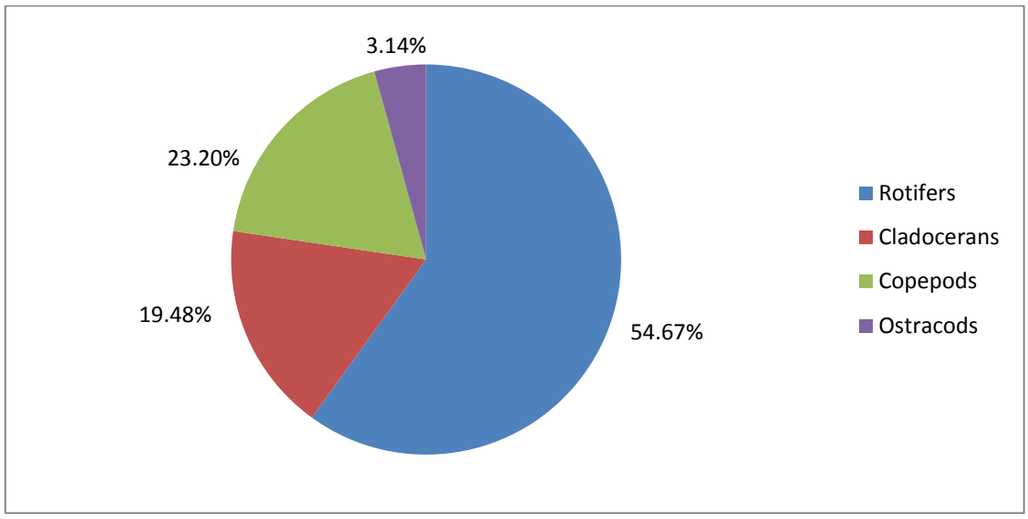

Fig-3. Zooplankton diversity of Mahadare reservoir during June 2012- June 2013

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