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Research Paper Zoology

Diversity of cladocerans, copepods and ostracods of Kapsi Lake Kapsi, Akola (MS) India

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ABSTRACT

Zooplankton diversity is one of the most important ecological parameters in water quality assessment.Zooplanktons are good indicators of the changes in water quality because they are strongly affected by environmental conditions & respond quickly to changes in water quality. Zooplankton is the intermediate link between Phytoplankton and fish. Hence qualitative studies of zooplankton are of great importance. In the present paper qualitative studies of cldoceran ,copepods and ostracods of Kapsi lake were carried out for one annual cycle (June 2005 to May 2006). Kapsi Lake Kapsi , which is situated 20° 42' N Latitude and 77° 02' E Longitude. Zooplankton samples were collected monthly by plankton net horizontally and vertically, with a mesh size of 55µm -70 µm between June -2005 to May- 2006. Collected specimens were preserved in 4 % formalin. As a result, a total of 48 (25 cladoceran, 8 copepods and 15 ostracods) species were recorded from Kapsi Lake. Similarly Physicochemical characteristics, of Kapsi lake were studied during May -05 to May -06. The water temperature of the lake ranges from 21.33 0C (Dec.-05) to 31.500C (May-06). The minimum and maximum Secchi disc depth and euphotic limit are 6.13 - 20.30 cm and 15.25 - 50.75cm respectively. Measurements of water samples taken from the site gave pH, Dissolved oxygen ,FreeC02 ,Total dissolved solids ,Phenolphthalein alkalinity,Total alkalinity , Total hardness, Calcium hardness as CaC03,Calcium hardness as Ca++ ions, Magnesium content, Chloride and Conductivity values of lake water were varies from 8.70-9.82, 3.50-6.55 mg/l, 3.25- 10.25 mg/l, 33.00 -53.38 mg/l , 12.50 -25.50 mg/l , 141.75 - 221.00 mg/l , 94.75 -182.75 mg/l, 30.45 -70.09 mg/l, 13.03 -27.77 mg/l, 8.97 - 32.75 mg/l, 17.49-49.91 mg/l and 58.93-77.10 µmhos/cm and Sulphate ,Phosphate and Nitrate was 1.17, 0.26, 0.75 mg/l. respectively in the lake water.

KEYWORDS: Cladocera, Copepoda, Ostracod diversity and physicochemical characters , Kapsi Lake Kapsi

Introduction

The cladocerans, copepods and ostracods are three major groups of zooplankton, which form the second trophic level of the food chain in aquatic environments. Furthermore, physical and chemical factors, including water temperature, oxygen concentration, as well as concentrations of nutrients, which are related to the availability of nutritional sources, can influence the crustacean community structure (Lampert and Sommer 1999). In freshwater ecosystems phytoplankton serve as an important source of food. It has been demonstrated that macrophytes may also provide zooplankton with a source of food (Jones et al. 2000, Degans and De Meester 2002), which apart from algae consists of a variety of protozoans, bacteria, and detritus. Zooplankton play an important role in indicating the presence or absence of certain fish species in determining their population densities in water (Ganesan and Khan 2008, Salve and Hiware 2010, Basinska et al. 2009). Chowdhury and Mamum (2006) studied on physico-chemical conditions and zooplankton population of two fish ponds in Khulna in Bangladesh and have reported maximum diversity and abundance of zooplankton in the months of August and September. In India, many studies on physico-chemical and biological water quality parameters and abundance of zooplankton have been carried out. Das et al. (2005) studied on zooplankton diversity of two fresh water and two brackish water wetlands of Goa and a total of 42 species of zooplankton have been recorded. Patil and Auti (2005) observed seasonal variations of zooplankton from Salim Ali lake of Aurangabad and reported the seasonal diversity of different zooplankton which indicates a characteristic pattern peculiar to water bodies in urban environment. In the study on the zooplankton diversity and physico–chemical conditions in the three perennial ponds of Virudhunagar district of Tamilnadu state, Rajagopal et al. (2010) have reported that the presence of certain species like, Monostyla,, Keratella, Leydigia, Moinodaphnia, Diaptomus, Diaphanosoma , Cypris and Brachionus are considered to be biological indicator for eutrophication. Ahmad et al (2011) studied Zooplankton population in relation to physico-chemical factors of a sewage fed pond of Aligarh (UP), India.

India, has very rich inland water sources on southern region, many studies have been carried out with the purpose of identifying cladoceran, copepod and ostracod species in many lakes of southern regions but few studies of above mentioned group in central region of India so that present study on diversity of Cladocera, Copepoda, Ostracod fauna of Kapsi Lake Kapsi district Akola were made during June -2005 to May-2006.

Materials and Methods:

The Kapsi lake is situated to 20° 42′ N **Latitude and** 77° 02′ E **Longitude** it lies 925 feet above sea level. Its maximum depth is 550 cm and it was on two nullah one originate from Chikhalgaon and another from Mazod. The excess water of lake drains into outlet located in the western region of lake. Monthly sample from eight selected station were collected separately for physicochemical characteristics and zooplankton diversity of lake.Water sample collected from 2 to 3 feet depth with the help of Rutner water sampler for physicochemical analysis and plankton net (mesh size 55 to 70 µm) for zooplankton diversity both horizontally and vertically between June 2005 and May 2006. The plankton samples were immediately fixed in 4% formaldehyde at the stations and observed under the trinoccular research microscope in the laboratory. Identification of the species were done by using keys in Freshwater Biology by Edmondson,(1959)APHA ,(1998) Adoni (1985). Water temperatures were measured by a thermometer with 0.1¼C sensitivity. pH, conductivity, total dissolve solids, Dissolved oxygen measurements were performed by Systronic make Water analysis portable kit at the station and alkalinity ,hardness ,chloride measurements were made by titration methods, sulphate, phosphate and nitrate measured by spectrophotometer in the laboratory.

Observations and Results:

Seasonal abundance were observed in the lake water during June 2005 to May 2006 (Table1) Zooplankton community of Kapsi lake comprised of 48 species belonging to cladocera, (25species) copepoda (8 species) and ostracoda (15 species). Table 1 depicts the seasonal abundance of different species in the lake water during June 2005 to May 2006.

Ceriodaphnia lacustris, Moinodaphnia macleayii, Eucyclops agilis and Candona faeolata were continuous species of lake during June 2005 to May 2006 (Table:-1) .

Table 1. List of zooplankton and their seasonal abundance in Kapsi lake

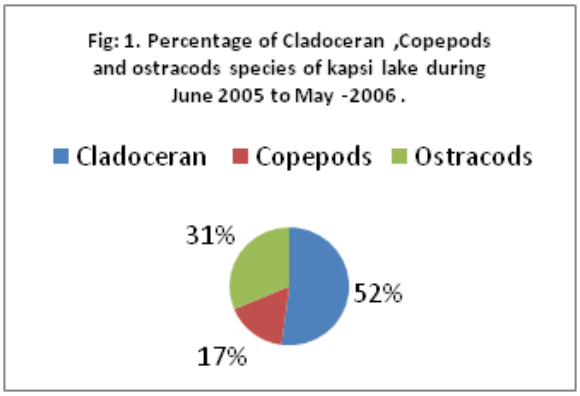
Sr. No	Zooplankton	Rainy season 2005	Winter season 2005 -2006	Summer season 2006
	Cladocerns			
1	Acantholeberis curvirostrics	+++	+	++
2	Allonella globulosa	+++	+	+++
3	A. nana	+	++	++
4	Bosmina longirostris	++++	-	++++
5	Bunops serricadota	+	+	-
6	Camptocercus oklahomensis	+++	+	-
7	Ceriodaphania laticaudata	++++	+	_
8	C. lacustris	++++	++++	++++

9	Chydrous gibbus	+	+++	+
10	C. latus	++	+	+
11	C. ovalis	+	++	+
12	Daphania pulex	++	++++	+
13	Ceriodaphnia dubia	++++	+	+++
14	Ilyocriptus spinifer	+	+++	-
15	Latona parviremis	++++	-	+++
16	Latonopsis occidentalis	+++	+++	+
17	Macrothrix rosea	++++	++++	+++
18	Mionodaphnia macleayii	++++	++++	++++
19	Monospilus dippar	+	+	-
20	Polyphemus pediculus	++++	-	++
21	Scapholeberis kingi	++++	+	+++
22	Sida crystalline	++	+++	++
23	Streblocerus serricaudatus,	++++	+	+
24	Unidentified	-	+	++
25	Wlassicsia kinistinensis	++++	+	++
II	Copepods			
1.	Cyclops viridis	++++	+	+++
2.	Cyclopus bicuspidatus	+	++++	++
3.	Diaptomus dorsalis	-	+++	+++
4.	D. marshianus	+	+	++
5.	Diaptomus sp.	-	+	-
6.	Eucyclops agilis	++++	++++	++
7.	E.prionophorus	++++	+	+++
8.	Helicyclops species	+	++++	+
III	Ostrcods			
1	Candocypria osborni	++	+++	++
2	Candona enensis	++	+++	+++
3	C. scapulosa	++++	+	-
4	C. faeolata	++++	++++	++
5	Potamocypris comosa	+	++	++
6	P. smaragdina	+	+	-
7	P. islagrandensis	++++	+++	-
8	P. pallid	-	+++	+++
9	Entocythere sp	-	+++	++
10	Cypridopsis Helvetica	+++	+++	-
11	C. Mexicana	+	+	+++
12	Chlamydotheca texastensis	-	++	++
13	Cyprinotusaureus simpsoni	++	+++	++
14	Cyprois marginata	++++	-	-
15	Entocythere Mexicana	-	-	+

Table:-2 GroupWise species diversity of zooplankton during different seasons.

Group	Season		
	Rainy season	Winter season	Summer season
Cladocera	24	22	20
Copepoda	6	8	7
Ostracoda	11	13	10
Total	41	43	37

Species richness of Cladocera was highest. A total of 25 species belonging to cladocera were obtained during the period of investigation. Lowest diversity was exhibited by Copepoda being represented by eight species. There were 15 species of Ostracods were obtained in the lake water (Table 1). Table 2 shows the groupwise diversity of zooplankton. In rainy season, 41species of zooplankton were recorded and during summer season 37 species found to occur. Maximum number of species (43 species) were obtained during winter season.



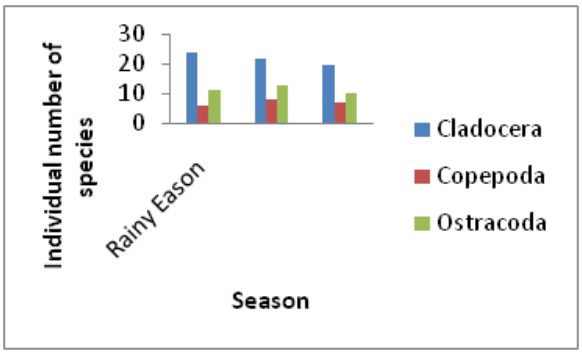


Fig:2 Relative abundance of major groups of zooplankton

Fig 1 shows overall composition of zooplankton, cladocera 52% ,Copepoda 17% and Ostracoda 31 % . While Fig 2 shows relative composition of different groups of zooplankton in different season relative composition of cladocera (50 %) was higher during rainy season as compared to copepod (12.5%) and ostracoda (22.91%) cladocera dominated zooplankton population during winter and summer season (45.83% and 41.66%) followed by Ostracods in rainy season (22.91%) in winter season(27.08%) and summer season (20.83%) . In present study maximum ostracoda species were in winter season and minimum during summer season. Maximum copepods were recorded during winter season followed by summer season and minimum were during rainy season.

The annual mean value and standard deviation of the physico-chemical parameters of water recorded from eight different sites and monthly variation in physico-chemical of Kapsi lake were depicted in Table3. The water temperature was ranged between 21.33 OC (December) to 29.93 OC (May). Similarly pH of the reservoir indicated an alkaline condition. Higher values of pH (above9.00) was observed throughout the period of investigation except during July and Aug (8.77& 8.91) in rainy seasons. Conductivity measurements suggest an annual average of 69.44µmhos/cm. The highest values of over 77.10µmhos/cm were recorded in the month of June. Total Dissolved Solids (TDS) ranged from minimum 33.00 mg/l in November 2005 to maximum 56.00 mg/l in June 2005 (Table2). The minimum and maximum Secchi disc depth and euphotic limit were 5.85 - 20.30 cm and 15.25 - 50.75cm respectively. During the study period, the range of dissolved oxygen values varied from 3.65 to 6.55 mg/l, the lowest being during the summer and highest during winter. Free carbondioxide were minimum during month of January 2006 (3.25mg/l) and maximum during September 2005 (10.25mg/l).Phenolphthalein alkalinity ranges between 11.63mg/l to 25.50 mg/l. Total alkalinity ranged from 141.75 mg/l in November to 221 mg/l in September 2005. Varying alkalinity was found to be related with the fluctuations in the photosynthetic rate of phytoplankton. Total hardness ranged from 94.75 mg/l in September to 197.25 mg/l in May2005. In the present study maximum chloride were recorded during January 2006 (49.91mg/l) and minimum during September 2005(17.49mg/l). Sulphate ranges between 0.69 mg/l to 2.06mg/l. Phosphate values were between 0.17 mg/l to 0.41 mg/l). Higher values of phosphate and nitrate during the study period were due to the incoming sewage including household detergents, kitchen waste, human and animal excreta etc. The concentration of nitrate content was ranged between 0.49 mg/l to 1.96 mg/l. These physicochemical vari-

ables fevered to the cladocerans, copepods and ostracods diversity of lake water.

Table 3. Monthly values of the physico-chemical composition of Kapsi lake Kapsi during June - 05 to May - 06

Parameter	J 05	J 05	A 05	S 05	O 05	N 05	D 05	J 06	F 06	M 06	A 06	M 06
W. T. (0C)	29.75 ±0.99	27.04 ±0.75	27.06 ±0.15	27.51 ±1.17	24.21 ±1.55	21.69 ±0.78	21.33 ±2.06	24.99 ±1.304	25.74 ±1.65	27.00 ±1.51	28.70 ±1.34	29.93 ±0.73
pH	9.1 ±0.22	8.77 ±0.30	8.91 ±0.66	9.82 ±0.20	9.45 ±0.13	9.59 ±0.19	9.45 ±0.23	9.32 ±0.398	9.21 ±0.48	9.23 ±0.33	9.14 ±0.45	9.23 ±0.36
COND. (mmhos/cm)	73.75 ±8.22	77.10 ±7.45	72.44 ±6.29	71.89 ±5.14	62.65 ±4.01	60.65 ±5.75	58.93 ±21.30	73.53 ±5.697	70.35 ±8.60	70.48 ±9.49	71.50 ±8.13	64.75 ±25.63
T. D. S. (mg/lit)	56 ±20.35	49.74 ±15.07	42.61 ±10.24	40.50 ±2.83	37.25 ±3.06	33.00 ±2.33	37.00 ±6.37	42.13 ±6.728	44.25 ±7.96	43.63 ±9.32	44.75 ±7.89	45.50 ±6.46
SDD	5.85 ±1.86	6.13 ±1.03	8.49 ±2.50	7.84 ±3.30	13.03 ±5.10	15.78 ±5.36	18.49 ±5.89	20.30 ±6.660	18.33 ±6.44	16.79 5.70	12.51 ±6.63	10.86 ±4.94
Trans. E (cm)	14.69 ±4.59	15.31 ±2.59	21.23 ±6.25	20.86 ±6.90	32.25 ±13.62	39.45 ±13.40	46.23 ±14.74	50.75 ±16.651	46.37 ±16.38	41.69 ±14.03	36.56 ±14.35	29.62 ±10.86
Trans. V	0.3475 ±0.12	0.31 ±0.05	0.24 ±0.06	0.24 ±0.07	0.15 ±0.05	0.12 ±0.03	0.10 ±0.03	0.10 ±0.026	0.11 ±0.03	0.12 ±0.03	0.13 ±0.06	0.17 ±0.05
D. O. (mg/lit)	3.65 ±0.30	3.86 ±0.31	3.74 ±0.22	4.48 ±0.12	4.23 ±0.15	4.38 ±0.77	5.85 ±1.00	6.55 ±0.769	6.45 ±0.71	6.03 ±0.51	5.70 ±0.71	5.15 ±0.58
CO2 (mg/lit)	7.3 ±2.50	7.21 ±2.95	4.75 ±2.31	10.25 ±3.11	9.50 ±2.33	6.75 ±2.60	5.00 ±2.39	3.25 ±4.773	3.94 ±2.73	4.96 ±3.75	7.29 ±4.94	6.50 ±5.83
P. Alkl. (mg/lit)	14.125 ±3.07	14.71 ±3.92	11.63 ±3.25	17.50 ±3.51	22.00 ±2.83	12.50 ±2.78	24.50 ±8.05	19.88 ±8.983	17.88 ±7.97	22.50 ±7.62	25.50 ±5.55	23.44 ±7.28
T. Alkl. (mg/lit)	173.75 ±14.36	179.88 ±18.76	173.88 ±12.31	221.00 ±10.64	178.75 ±22.85	141.75 ±14.48	170.00 ±12.56	207.25 ±31.892	187.50 ±42.10	199.75 ±24.32	203.63 ±17.57	214.38 ±19.68
T. Hard. (mg/lit)	189 ±45.33	137.25 ±39.91	132.50 ±46.60	94.75 ±37.17	111.50 ±23.42	102.50 ±22.16	135.13 ±30.65	182.75 ±36.347	155.13 ±47.84	167.00 ±41.06	169.63 ±53.96	182.00 ±42.52
CaCO3 (mg/lit)	61.95 ±15.57	63.79 ±14.80	59.48 ±12.18	58.01 ±6.73	35.70 ±12.09	30.45 ±4.63	40.63 ±14.56	55.63 ±12.896	54.97 ±12.26	56.15 ±18.58	60.04 ±9.93	69.14 ±14.11
Ca++ (mg/lit)	24.1725 ±6.31	24.18 ±6.51	22.43 ±5.01	21.47 ±5.63	14.55 ±4.63	13.03 ±2.06	19.05 ±7.28	23.54 ±4.557	23.95 ±3.40	27.41 ±4.05	27.77 ±5.41	26.50 ±7.80
Mg++ (mg/lit)	31.31 ±8.50	15.02 ±8.94	16.22 ±10.62	8.97 9.14	20.23 ±7.25	17.31 ±4.92	25.90 ±3.02	32.75 ±9.008	31.33 ±12.53	29.07 ±9.00	26.75 ±9.66	25.56 ±9.56
Cl (mg/lit)	32.48 ±15.34	26.79 ±11.72	19.00 ±2.93	17.49 ±1.93	20.74 ±4.17	24.37 ±7.03	37.78 ±6.78	49.91 ±7.985	44.83 ±8.71	42.00 ±9.18	43.88 ±10.19	35.18 ±9.41
SO4 (mg/lit)	1.265 ±0.35	1.62 ±0.43	1.57 ±0.38	2.06 ±0.20	1.76 ±0.16	0.79 ±0.57	0.83 ±0.34	0.69 ±0.131	0.84 ±0.22	0.91 0.36	0.96 ±0.42	1.10 ±0.63
PO4 (mg/lit)	0.1725 ±0.05	0.25 ±0.10	0.34 ±0.19	0.26 ±0.05	0.25 ±0.12	0.37 ±0.26	0.31 ±0.25	0.21 ±0.111	0.19 ±0.07	0.19 ±0.05	0.29 ±0.15	0.41 ±0.27
NO3 (mg/lit)	0.7675 ±0.53	0.90 ±0.43	0.84 ±0.41	1.96 ±0.49	0.49 ±0.13	0.57 ±0.17	0.59 ±0.15	0.540. ±0.87	0.69 ±0.34	0.68 ±0.36	0.74 ±0.45	0.52 ±0.34

Note:-W.T.-Water Temperature, COND.-Conductivity, T.D.S. –Total dissolved solids, D.O. Dissolved Oxygen, Trans.E.-Transparency (euphotic limit), Trans.V. Transparency (Vertical attenuation Coefficient), CO2-Carbon Dioxide, P.Alkl.- Phenolphthalein Alkalinity, T.Alkl. – Total Alkainity, T. Hard. –Total Hardness, CaCO3-Calcium Hardness as Calcium Carbonate, Ca++-Calcium Hardness as Calcium, Mg++ -Magnesium content, Cl –Chloride, SO4- Sulphate, PO4- phosphate , NO3- Nitrate,

Discussion

Cladoceran were frequently occurred during rainy season with moderate temperature, lower transparency, and a high standing crop of primary producers leading to greater availability of food. These same findings were expressed by Yousuf and Quadri (1985) studied the seasonal fluctuation of zooplankton in lake Manasbal, Kashmir, State of India and reported that the abundance of Cladocerans were more during rainy season, and lowest during summer seasons. Similarly, Kiran et al. (2007) have studied diversity and seasonal fluctuations of zooplankton in a fish pond of Bhadra, Shankaraghatta, Karnataka and reported that the highest abundance of cladocerans were during rainy season, but the lowest abundance of cladocerans were during summer season. Similar trends also observed in present study.

Ostracods are bivalve crustaceas found in both freshwater and marine water. There are over 1700 species of known ostracods of which about one- third are freshwater forms. They inhibit a wide variety of freshwaters like lakes, pools, swamps,streams and heavy polluted areas (Edmondson ,1959). Patil and Goudar (1989) reported occurrence of seven species of ostracods from Dharwad district. In the present study 15 species of Ostracods were found. Maximum number of ostrcod species were observed during the winter season and minimum during the rainy months. Similar trends also reported by Choudhary and Singh (1999) studied zooplankton population of Boosra lake at Muzaffarpur, Bihar State of India, and reported that the abundance of zooplankton were more during winter months and less during rainy months. Kumar (2001) studied the fresh water zooplankton of some lake in Dharmapuri District, Tamil Nadu state of India and reported that the abundance of Ostracods were maximum during winter months and minimum during rainy months. However Reet et al. (2007) noted significant changes in phytoplankton and zooplankton in lake Piepsi, Tortu, Estonia, and they have reported that the abundance of ostracods were highest during the summer months and lowest during the rainy seasons , which was mainly due to the seasonal changes and eutrophic condition of the lake.

Shahikanth& Vijaykumar,(2007) reported that the maximum abundance of copepods in winter season, while low density was in monsoon season. Present findings are agreeable with this reports .Copepods occupied third position of zooplankton and represented very low population diversity compared to other groups.The maximum abundance of copepods in winter season indicate that they prefer low temperature. In conclusion, present study showed that although nutrient levels were moderate, relatively high densities of zooplankton were found in Kapsi lake. The densities of various zooplankton thus, in the order Cladocera > Ostracoda > copepoda. The results indicates that the maximum number of genera occurred during winter season than summer and rainy season which also reported by (Kumar, 2001) the less number of

genera might be attributed to the less nutrients in the reservoir which consequently result in less productivity. The reduction in the number of species may be due to predation,

Among Physicochemical characteristics (Table2) water temperature, conductivity , alkalinity , total dissolved solid , total hardness show significant standard deviation during twelve months of investigation. Sulphate phosphate and nitrate value show that the oligomesotrophic status of lake

Conclusions:

From the above observation Kapsi lake Kapsi having rich diversity of Cladoceran , copepods and Ostracod species so that these water-body is suitable for fish culture . Physicochemical characteristics reveal that the trophic status of Kapsi lake is oligomesotrophic .

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REFERENCES

Abdus, Saboor & Altaff, K. (1995) J Eco Biol, 7(4), 269–275. | Adoni, A. D. (1985) Work book on liminology. Indian MAB committee, Department of environment,Govt. of India, Sagar, Pratibha Publishers. | Ahmad U , Parveen S, Khan AA, Kabir HA, Mola HRA, Ganai AH (2011): Zooplankton population in relation to physico-chemical factors of a sewage fed pond of Aligarh (UP), India, Biology and Medicine, Vol 3 (2) Special Issue: 336-341. | Basińska Anna , Monika Cichocka, Natalia Kuczyńska-Kippen (2009): The diurnal distribution of cladocerans in a bed ofMyriophyllum verticillatum in Lake Wielkowiejskie, Int. J. of Ocean. and Hydrobiol. Vol. 38 , (1) 103-111. | APHA, (1998) Standard Methods for the Examination of Water and Wastewater. American Public Health Association, Washington, DC. | Choudhary, S. and D.K. Singh (1999).: Zooplankton population of Boosra lake at Muzaffarpur. Bihar. India. Environ. Ecol., 17, 444-448 . | Chowdhury, A.H and A. Al. Mamum (2006): Physico-chemical conditions and plankton population of two fish pond in Khulna, Bangladesh. Univ. J. Zool. Rajshahi., 25, 41-44. | Das, S.R., Patil, S.G. and Nandi N.C. (2005): Zooplankton diversity of wetland ecosystems of Goa. J. Environ. Sociobiol., 15-23 | Degans H., De Meester L. (2002) Top-down control of natural phyto- and bacterioplankton prey communities by Daphnia magna and by the natural zooplankton community of the hypertrophic Lake Blankaart. Hydrobiologia 479: 39-4. | Edmondson WT,(1959)Ward and Whipple's Freshwater Biology. 2nd ed., John Wiley & Sons Inc., New York, 1248 pp. Freshwater Biol. (3), 259-265. | Ganesan, L.and Khan, R.A.(2008) Studies on the ecology of zooplankton in a flood plain Wetland of West Bengal ,India ,Proceedings of Taal 2007: The 12th World conference : 67-73. | John, M., Winner, P. H. & Patrick, D. (1980) Zooplankton species diversity in lake St. Clairontaria, Canada. Hydrobiologia 75, 57-63. | Jones J.I., Moss B., Eaton J.W., Young J.O.(2000) Do submerged aquatic plants influence periphyton community composition for the benefit of invertebrate mutualists? Freshwater Biology 43: 591-604. | Kiran, B.R., E.T. Puttaiah and Devidas Kamath (2007): Diversity and seasonal fluctuation of zooplankton in fish pond of Bhadra fish dam, Karnataka. Zoos'Print Journal, 22, 2935-2936. | Kumar K. S. (2001)Fresh water zooplankton of some lake in Dharmapuri District, Tamil Nadu, India J. Aqua. Biol,16 (1&2), 5–10. | Lampert, W.& Sommer U.(1999) Limnoökologie. Georg Thieme Verlag Stuttgart, New York, 489pp. | Mathew P. M. (1985) J. Inland Fish. Soc.India, 17(1&2): 11–24. | Patil C.S. and Goudar ,B.Y. M. (1989): Freshwater Invertebrates of Dharwad .Prasaranga ,Karanatka ,University ,Dharwad. | Patil, S.S. and Auti (2005).:Seasonal variations of zooplankton from Salim Ali Lake of Aurangabad. BIOINFOLET 2(2), P 81-85.EcophysioOccuplHlth. www.envfor.nioc.in/paryaabs/v23n14/07em-34-eco. | Rajagopal, T., Thangamani, S.P., Sevarkodiyone Sekar, M. and Archunan G. (2010): Zooplankton diversity and physico – chemical conditions in the three perennial ponds of Virudhunagar district of Tamilnadu. J. Environ. Biol., 33 265-272. | Reet laugaste, A.,J. Haberman and Krause (2007): Significance changes in phyto and zooplankton in lake Pepsi in recent years. Tartu, Estonia. Proc. Estonian. Acad. Sci. Bio. Ecd., 56, 106-123 . | Salve, B. & Hiware, C. (2010) Zooplankton Diversity of Wan Reservoir, Nagapur (MS) India, Trends Research in Science and Technology , 2 (1), 39-48. | Shahikanth M. and Vijaykumar K (2007) Environ Monit Assess DOI 10.1007/s10661-008-0329-z. | Yousuf, A.R. and M.Y. Quadr i(1985): Seasonal fluctuations of zooplankton in lake Manasbal, Kasmir. Ind. J. Ecol., 12, 354-359



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