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## THE STUDIES ON ZOOPLANKTON OF KALAMNURI MINOR IRRIGATION DAM, KALAMNURI, DIST. HIGOLI (M.S.)



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### A B S T R A C T

*Zooplanktons are the most fascinating group of microorganisms found in aquatic environment. They play an important role in the food chain. They are of great importance as source of live food for fishes. The total number of 30 species was found belonging to zooplankton group but among all the zooplankton the cladocera was the dominant group of zooplankton found in the present investigation viz., 10 species cladocera, followed by 9 species of rotifer 7 species of copepoda and 4 species of ostracoda during the year of August 2004 - July 2005. The present investigation is an attempt to study the zooplankton community of kalamnuri dam, a minor irrigation reservoir.*

**Key words :** Kalamnuri Dam, zooplankton.

#### INTRODUCTION

Zooplanktons have been used as indicator for monitoring the water quality, trophic status and pollution level. They form a bulk of live food for variety of secondary consumers including commercially important groups of crustaceans, prawns, and fishes. They help generation of potentially functional and dynamic aquatic community. According to Pawar *et.al.* (2006) the plankton study is very useful tool for the assessment of biotic potential and contributes to overall estimation of basic nature and general economic potential of water body. Use of variety of agro-chemicals in the catchment and human pressure are causing depletion of aquatic biota due to water pollution in the case of lakes and reservoirs. During monsoon turbidity caused by agricultural and surface runoff and soil erosion severely affect the production of plankton. (Akhtar, *et.al.* 2007). A number of studies covering these aspects have been carried out earlier

by Khan (1992), Malathi *et.al.* (1998), Annapurna *et.al.* (1999), Hessen *et.al.* (2005). The present investigation was undertaken to study of zooplankton diversity and seasonal changes in population density in kalamnuri dam, a minor irrigation reservoir in Marathwada region of Maharashtra state of India.

#### MATERIAL AND METHODS

The water samples for zooplankton analysis were collected from different sampling sites, i.e. A, B and C for a period of one year from August 2004 to July 2005. The samples were collected by using plankton net made of bolting cloth (with 30 meshes/cm). The samples collected in 500 ml bottles and preserved in Lugol's iodine solution. The sampling was carried out in the morning between 8.30 to 9.30 Am. The quantitative and qualitative analysis was carried out by taking 25 ml of concentrate following sedimentation technique. The zooplankton was observed and identified under phase contrast microscope and were

counted by using Sedgwick- rafter cell counting method. Results of counting were converted to organisms per liter of water. The Identification was carried out by using methodology of kodrakar(1998), APHA(1998).

**RESULTS AND DISCUSSION**

The monthly variations of zooplankton are represented in table No. 1 and seasonal values are expressed in table No. 2. The result shows that the zooplankton population in kalamnuri dam varied from 24 to 49 org/number/lit. 18 to 35 org/number/lit. and 14 to 39 org/number/lit. at sampling sites A,B, and C respectively. Some of the worker worked on the zooplankton diversity. Singh (1980), Khan *et.al.* (1986) zooplankton population is affected by the dissolved oxygen, pH alkalinity, temperature and light. The seasonal variation of zooplanktion 40 to 50 org/number/lit.ctacodera, 23 to 31 org/number/lit.of coepoda, 34 to 48 org/number/lit.rotifers and 11 to 39 org/number/lit. Copepod a in the winter season. In summer season 10 to 22, 37 to 54, 39 to 61 and 16 to 25 org/number/lit. of cladocera, copepod,rotifer and ostracoda respectively in summer season but in the rainy season the seasonal count of zooplankton 12 to 22, 17 to 22, 10 to 26 and 45 to 56 org/num/lit of cladocera, copedoda, rotifera and ostrcoda respectively. The number of organism and population of zooplankton decrease and increase due to the water temperature and availability of food so organisms which affects the populations of the zooplankton in the water bodies.

**CLADOCERA :-** The cladocera components of zooplankton play an important role in the benthic throphodynamics. In India the limnetic zooplankton communities are invariably dominated by the species of cladocera (Sharma and Michael, 1987). In the present study the monthly average and total number of cladocera varied from 1 to 17 org/number/lit.1 to 13 org/number/lit. and 1 to 14 org/number/lit. at sampling sites A,B and C respectively.

**COPEPODA :-** Water temperature and availability of food organisms affect the copepod population. Chauhan (1993) has recorded maximum copepods in summer and minimum during winter. The monthly average and total number of copepoda varied from 1 to 16 org/number/lit., 1 to 15 org/number/lit.and 1 to 18

org/number/lit. at sampling sites A,B, and C respectively.

**ROTIFERS :-** The difference in periodicity and population density of different rotifer species can be analyzed by considering be nutrional ecology and biotic interaction. According to Radwan (1980) nanoplankton biomass exert direct effect on rotifers fertility. The monthly average and total number of rotifers varied from 4 to 18 org/number/lit.1 to 18 org/number/lit.and 1 to 15 org/number/lit.at sites A,B, and C respectively.

**OSTRACODS :-** Ostracoda are found both in lentic and lotic water bodies. During investigation the ostracods population were found to be higher in the monsoon while lower in winter and summer and it is due to feeding pressure of stocked fishes. The monthly average and total number of ostracods varied from 1 to 15 org/number/lit.1 to 13 org/number/lit.and 1 to 18 org/number/lit.at sampling sites A,B, and C respectively.

**CONCLUSION:-** The data Obtained from zooplankton analysis of water from kalamnuri dam shows that it is well maintained ecosystem of dam and therefore there is more scope for fish cultivation becouser the abundant growth of zooplankton in kalamnuri dam.

**List of zooplankton species in Kalamnuri dam water are as follows:-**

- 1) **Cladocers**
  - Alora sp.* *Moina sp.*
  - Alonarectangula richardi sars* *Moina brachiata jurine*
  - Ceriodaphina laticaudata* *Moina micrura*
  - Ceriodaphnia* *Bosmania longirostris*
  - Daphnia craniata* *Simo cephalus sp.*
- 2) **Copepoda**
  - Argulus foliceous* *Mesocyclops sp.*
  - Cyclops sp.* *Limnocalanus sp.*
  - Canthocymptus species* *Neo diaptonus sp.*
  - Diaptomus sp.*
- 3) **Rotifera**
  - Asplanchna sp.* *Filimia bory*
  - Brachionus falcatus* *Keratella cochlaeria*
  - Brachinous forcipulata* *Keratella serrulata*
  - Brachinous plicetitis* *Keratella tropica*
  - Filinia longiseta*
- 4) **Ostracoda**
  - Cypris subglobosa* *Stenocypris*
  - Cypris obensa* *Meta cypris*

Componente Months	Cladocera			Copepoda			Rotifera			Ostracoda		
	A	B	C	A	B	C	A	B	C	A	B	C
Spots												
August	06	02	02	02	03	02	04	01	01	15	13	13
September	04	08	07	01	03	04	08	04	07	11	11	13
October	17	11	11	07	06	08	10	03	11	13	02	01
November	14	13	14	09	09	05	13	10	07	11	02	02
December	10	10	13	07	04	01	14	11	13	08	03	03
January03	09	06	02	08	08	09	11	03	03	07	07	03
February	13	03	05	14	02	11	15	11	08	19	04	09
March	03	04	03	11	11	18	03	14	10	04	02	06
April	05	01	02	13	15	14	15	18	15	01	01	02
May	01	02	01	13	09	11	18	07	06	02	08	08
June	02	01	01	16	11	10	09	03	02	10	13	10
July	10	05	02	03	01	01	05	02	02	09	10	15
Total	94	66	63	104	82	94	135	97	85	100	76	92

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**R E F E R E N C E**

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Season	Zooplankton	SPOT A	SPOT B	SPOT C
WINTER	Cladocera	50	40	40
	Copepoda	31	27	23
	Rotifera	48	37	34
	Ospaloda	39	14	11
SUMMER	Cladocera	22	10	11
	Copepoda	51	37	54
	Rotifera	61	50	39
	Ospaloda	16	15	25
RAINY	Cladocera	22	16	12
	Copepoda	22	18	17
	Rotifera	26	10	12
	Ospaloda	45	47	56