

## ORIGINAL ARTICLE

# Population kinetics and seasonal fluctuation of zooplankton of Vishnupuri dam, Nanded district, (M.S) India.

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## ABSTRACT

Population Kinetics and seasonal fluctuation of zooplankton of Vishnupuri dam of Nanded district was undertaken during the year June 2015 to May 2016. Zooplankton population Kinetic was composed of three species of Ostracoda, seven species of Rotifers, six species of Copepoda and eleven species of Cladocera. Among Zooplankton, particularly Cladocera was the dominant group throughout the study. The highest count of Cladocera 153 species was recorded in the month of May.

**Keywords:** Vishnupuri dam, Zooplankton, Rotifera, Cladocera, Ostracoda.

## INTRODUCTION

The Godavari river is the most important river in Marathwada region. It has the Source at Trimbakeshwar in Sahyadri hills near Nasik, this river enters in Aurangabad district and flowing through Beed, Parbhani and Nanded district. The other river of Marathwada region are Purna, Penganga, Dudna, Asna, Sindphana Bindusara, which are used for drinking water, agriculture industries and fisheries purpose. Zooplanktons are also effective tools in environment biomonitoring of aquatic system as they quickly respond to changes in water quality. Zooplanktons are reported to accumulate chemicals through food intake and direct absorption of chemicals from water. The occurrence and abundance of Zooplanktons depends on its productivity, which in turn is influenced by physico-chemical parameters and the level of nutrients in the water. The Zooplankton occupy a central position between the autotrophs and other heterotrophs and form an important link in food web of a freshwater ecosystem. The Zooplanktons are heterogeneous assemblage of minute floating animal from which constitute a major link in the energy transfer at secondary level in aquatic biotopes. The Zooplankton can also play an important role in indicating the presence or absence of certain species of fishes or in determining the population densities.

The Zooplankton which play role of converting phytoplankton into food suitable for fish and aquatic animals, have acquired ecological aspects of Zooplankton have been a subject of study in India and several workers [1,2,3,4,5,6,7,8,9,10,11].

The paper deals with the study of Zooplanktons population Kinetics and seasonal fluctuation of Vishnupuri dam. Qualitative and quantitative analysis of Zooplanktons population kinetics were carried out. Vishnupuri dam is a cross on the Godavari river in Nanded district (M.S.) India.

## METHODOLOGY

### Study site:

Nanded city receives its daily water supply from Vishnupuri dam situated near Asarjan village on the river. The command area of the dam is distributed in Nanded, Kandhar & Loha taluka of Nanded district. The dam has a live storage of about 80.79 million cubic meters, out of which 43.95 million cubic meters storage is reserved for drinking purpose for Nanded city and 10.26 million cubic meters storage is reserved for industrial applications.



**Fig. 1: Vishnupuri Dam constructed on Godavari River in Nanded**

### Methods:

The methods for the collection preservation and enumeration of plankton have been described monthly samples of Zooplankton were collected from Jun 2015 to May 2016 from four stations (A, B, C and D) by using plankton net of mesh size 41  $\mu$  m. plankton samples were collected from four fixed stations between 8:00 A.M. to 11:00 A.M. the sample were transferred to 500 ml. capacity plastic bottles and preserved using 4% formalin solution. Standard fauna and other literature

were used for identification of different Zooplankton species. [12,13,14,15,16]. The number of Planktons Per liter was determined using Sedgwick rafter cell by taking 1 ml of approximately diluted sample and the observation was reported number of Zooplanktons per liter.

## RESULT AND DISCUSSION

The prominent group of Zooplankton identified during present study were Cladocera, Ostracoda, copepoda and Rotifera. The list of Zooplanktons observed is given below:

**1) Cladocera:** *Ceriodaphin laticaudata*, *C. cumuta*, *Alonarectangula richardisars*, *Moina brachiata jurine*, *M. micrura*, *Daphnia*, *Bosminia*, *Chydorus sp.*, *Pseudosida sp.*, *Simocephalus*, *Sida sp.*

**2) Ostracoda :** *Strandesia*, *Stenocypris*, *Cypris*.

**3) Copepoda :** *Cyclops*, *Argulusfoliaceous*, *Mesocyclops sp.*, *Microcyclops sp.*, *Heliodioptomus sp.*, *Nauplius*.

**4) Rotifera :** *Asplancha*, *A.intermedia*, *Brachious durgae*, *B.Calyciflours vandoreas*, *B.rubens*, *Filinia bory*, *F. terminals*, *Keratella*, *Philodena*. The monthly variations in the density of different groups of Zooplanktons is shown in the table.

The amount of natural food in the dam is the most important parameter determining the efficiency of supplementary feed intake by fish by growth. The present observation is similar to those observation made by other workers.

**1) Cladocera :** Quadri and Yousuf [14] investigated the influence of some physic-chemical factors on the seasonality of cladocera.

**2) Ostracoda :** Tonapi [15] found the higher population of ostracoda during monsoon might be due to the abundance of fine detritus to which ommivorous organisms feed over during monsoon from their natural benthic habitat and bacteria, mould and algae as food.

**3) Copepoda :** Singh et al. [12] reported 02 copepoda in Nanaksagar, a reservoir located in Tarai area.

**4) Rotifera :** Peijler [16] showed that there is no direct effect of  $p^H$  on rotifer population.

**Table 1 : Monthly fluctuation of Zooplankton (count/ml.) of Vishnupuri Dam during the year 2015-2016**

Zooplankton Group	Station	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>Cladocera</b>	A	35	18	27	15	08	12	18	26	19	27	32	38	275
	B	32	20	25	11	09	14	22	23	17	24	35	40	271
	C	30	15	22	13	12	10	20	18	14	20	30	39	243
	D	36	17	20	16	07	17	24	21	16	25	35	36	270
<b>Total</b>		<b>133</b>	<b>70</b>	<b>94</b>	<b>55</b>	<b>36</b>	<b>53</b>	<b>84</b>	<b>88</b>	<b>66</b>	<b>96</b>	<b>131</b>	<b>153</b>	<b>1059</b>
<b>Ostracoda</b>	A	06	09	04	05	08	06	09	12	16	11	09	12	107
	B	04	06	05	03	10	08	05	10	13	09	12	08	93
	C	07	08	03	06	07	04	07	16	18	07	14	10	107
	D	03	05	02	04	04	07	03	14	10	08	05	11	76
<b>Total</b>		<b>20</b>	<b>28</b>	<b>14</b>	<b>18</b>	<b>29</b>	<b>25</b>	<b>24</b>	<b>52</b>	<b>57</b>	<b>35</b>	<b>40</b>	<b>41</b>	<b>383</b>
<b>Copepoda</b>	A	35	15	03	07	09	15	17	12	16	22	24	32	207
	B	38	17	04	05	08	17	20	14	10	20	27	30	210
	C	32	20	02	09	06	12	22	10	12	23	25	28	201
	D	30	16	01	04	07	10	18	07	14	25	22	31	185
<b>Total</b>		<b>135</b>	<b>68</b>	<b>10</b>	<b>25</b>	<b>30</b>	<b>54</b>	<b>77</b>	<b>43</b>	<b>52</b>	<b>90</b>	<b>98</b>	<b>121</b>	<b>803</b>
<b>Rotifera</b>	A	41	17	15	12	09	13	15	12	16	20	28	34	332
	B	35	20	12	09	11	12	17	14	15	22	25	36	228
	C	31	16	13	07	14	15	19	10	13	19	29	32	218
	D	40	14	16	14	12	10	14	09	17	21	26	38	231
<b>Total</b>		<b>147</b>	<b>67</b>	<b>56</b>	<b>42</b>	<b>46</b>	<b>50</b>	<b>65</b>	<b>45</b>	<b>61</b>	<b>82</b>	<b>108</b>	<b>140</b>	<b>909</b>
<b>Grand Total</b>		<b>435</b>	<b>233</b>	<b>174</b>	<b>140</b>	<b>141</b>	<b>182</b>	<b>250</b>	<b>228</b>	<b>236</b>	<b>303</b>	<b>277</b>	<b>455</b>	<b>3154</b>

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