



# Assessment of Zooplankton of Karadkhed Dam, District Nanded, Maharashtra, India

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## ABSTRACT

The present study was conducted to the An assessment of Zooplankton of Karadkhed dam of Deglur Taluka in Nanded district, Maharashtra, India during the year June 2016 to May 2017. Presently 31 Zooplankton genera representing various group. 11 species of Cladocera, 03 species of Ostracoda, 07 species of Copepoda, 10 species of Rotifera. Among Zooplankton particularly Cladocera was the dominant group throughout the study. The highest count of 141 species was record in the month of May.

**Key words-** Karadkhed dam, Zooplankton, Rotifers, Cladocera, Ostracoda, Copepoda.

## INTRODUCTION

Zooplankton by their heterotrophic activity play a key role in the cycling of organic materials in aquatic ecosystems and are used as bioindicators of environmental quality (Dede and Deshmukh, 2015, Pawar 2017a, 2017b, 2018a, 2018b). The seasonal fluctuations of Zooplankton populations can be expressed by various quantitative parameters such as population density, biomass and biochemical compound (Jose *et al.*, 2015, Pawar, 2017c, 2017d, 2018a, 2018b). The planktonic study is very useful tool for the assessment of water quality in any type of water body and also contributes to an understanding the basic nature and general economy of the lake and reservoir; plankton are occur in all natural as well as artificial impoundments like lakes, ponds, tanks, reservoirs and irrigation canals, etc., Kehayias *et al.* (2014), (Pawar, 2017a, 2017b, 2018a, 2018b). Plankton is an important component of ecosystem. Zooplankton community is also very sensitive to environmental changes and thus is of considerable. Potential value as water quality indicators (Manickam *et al.*, 2014) Pawar, 2017a, 2017b, 2017a, 2017b, 2018a, 2018b). Zooplankton plays an important role in indicating the water quality, eutrophication status and productivity of a fresh water body. The plankton not only increase fish production but also help in bioremediation of heavy metals and other toxic material (Watkar and Barbate, 2013, Smitha *et al.*, 2013, Pawar 2017a, 2017b, 2017a, 2017b, 2018a, 2018b). Zooplankton biodiversity serves as an ecological indicator of aquatic environment due to their rapid response

according to environmental changes (Pandey *et al.*, 2004, Narasimha Rao and Jaya Raju, 2001, Pawar 2017a, 2017b, 2017a, 2017b, 2018a, 2018b). Zooplanktons are often an important link in the transfer of energy from producers to aquatic carnivores. Zooplankton is a good indicator of changes in water quality because it is strongly affected by environmental conditions and responds quickly to changes in physical and chemical conditions as well as environmental conditions. Zooplanktons are reported to accumulate chemical through food intake and direct absorption of chemical from water (Pandey *et al.*, 2004, Narasimha Rao and Jaya Raju, 2001). The Zooplankton can also play an important role in indicating the presence or absence of certain species of fishers or in determining the population densities. The Zooplankton which play role of converting phytoplankton in to food suitable for fish and aquatic animals, have acquired ecological aspects of Zooplankton. Several workers Dede and Deshmukh (2015), Jose *et al.* (2015), Pawar, 2017a, 2017b, 2017c, 2017d, 2017e, 2018a, 2018b, Kehayias *et al.* (2014), Manickam (2015), Manickam *et al.* (2014), Watkar and Barbate (2013), Smitha *et al.* (2013), Pandey *et al.* (2004), Narasimha Rao and Jaya Raju (2001).

The present investigation have been undertaken to study an assessment of Seasonal Changes in Zooplankton biodiversity in Karadkhed dam. Qualitative and quantitative analysis of phytoplankton assessment were carried out. The height of the dam above lowest foundation is 19 m. (62 ft.) while the length is 1,454 m. (4,770 ft.). The volume content is 498 km<sup>3</sup> (119 cu. mi) and gross storage capacity is 12,000,00 km<sup>3</sup> (2,878,95 cu. mi). It is situated near Karadkhed which is 12 km. away from sub-district headquarter Deglur and 93 km. away from district headquarter Nanded, Maharashtra, India.

## MATERIALS AND METHODS

The methods for the collection preservation and enumeration of plankton have been described monthly samples of Zooplankton were collected from Jun 2016 to May 2017 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 was used for identification of different Zooplankton species. APHA (1989), Pennak (1989). The number of Planktons Perliter was determined using Sedgwick rafter cell by taking 1 ml of approximately diluted sample and the observation was reported number of Zooplanktons per liter.

## RESULTS 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:

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

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

**Copepoda:** *Cyclops sp.*, *C. sternuus* *Argulusfoliaceus*, *Mesocyclops sp.*, *Microcyclops sp.*, *Heliodiaptomus sp.*, *Nauplius*.

**Rotifera:** *Asplancha*, *A.intermedia*, *Brachious durgae*, *B. calyciflorus*, *B. falcatus typical*, *B.Calyciflours vandoreas*, *B.rubens*, *Filinia bory.*, *F. terminals*, *Keratella*, *Philodena*. *Notholea sp.*,

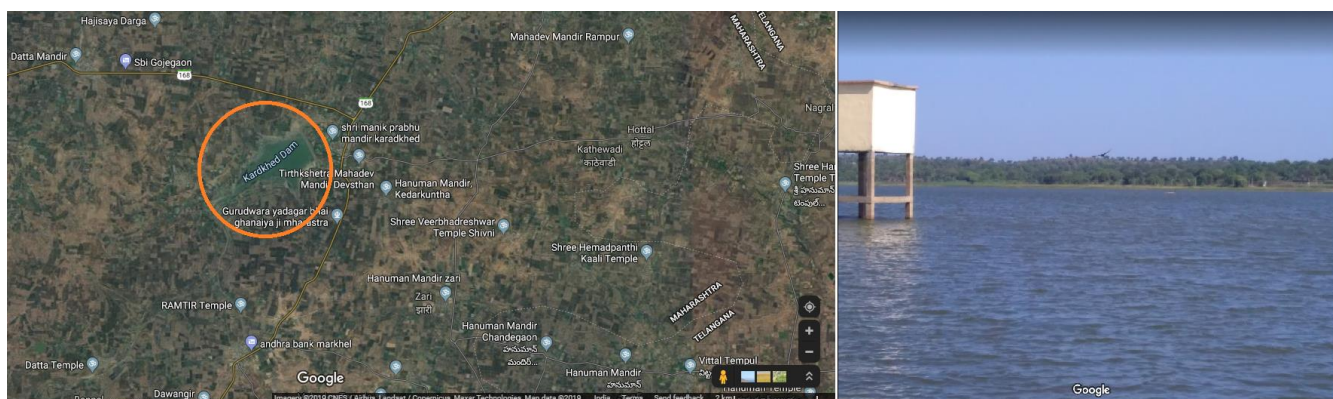


Fig. 1 : Map of Khardkhed Map (Credite Google map)

**Table 1: Assessment of Zooplankton (count/ml.) Of Karadkhed Dam During the Year June 2016 to May 2017.**

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	32	15	25	13	06	10	17	21	11	25	29	35	239
	B	29	17	23	09	08	12	21	19	14	21	32	37	242
	C	27	14	20	11	10	09	18	17	12	19	28	35	220
	D	30	16	18	15	09	13	22	20	15	22	33	34	247
<b>Total</b>		<b>118</b>	<b>62</b>	<b>86</b>	<b>48</b>	<b>33</b>	<b>44</b>	<b>78</b>	<b>77</b>	<b>52</b>	<b>87</b>	<b>122</b>	<b>141</b>	<b>948</b>
<b>Ostracoda</b>	A	07	08	03	04	06	04	07	12	13	09	07	09	89
	B	05	05	04	03	08	06	04	08	11	08	10	06	78
	C	09	06	02	05	05	03	05	12	15	06	12	08	88
	D	04	07	01	03	03	05	02	11	09	05	04	07	61
<b>Total</b>		<b>25</b>	<b>26</b>	<b>10</b>	<b>15</b>	<b>22</b>	<b>18</b>	<b>18</b>	<b>43</b>	<b>48</b>	<b>28</b>	<b>33</b>	<b>30</b>	<b>316</b>
<b>Copepoda</b>	A	30	13	02	05	07	11	12	09	13	18	23	28	171
	B	32	15	03	03	06	13	18	11	08	16	25	26	176
	C	29	17	01	06	05	10	20	08	10	20	22	24	172
	D	27	12	02	03	06	09	17	06	11	22	20	27	162
<b>Total</b>		<b>118</b>	<b>57</b>	<b>08</b>	<b>17</b>	<b>24</b>	<b>43</b>	<b>67</b>	<b>34</b>	<b>42</b>	<b>76</b>	<b>90</b>	<b>105</b>	<b>681</b>
<b>Rotifera</b>	A	35	14	13	10	07	11	13	10	14	18	25	30	200
	B	32	18	10	07	08	08	15	12	13	20	21	32	196
	C	29	13	11	06	10	12	17	08	12	17	26	29	190
	D	36	12	14	12	11	09	12	07	15	19	19	35	201
<b>Total</b>		<b>132</b>	<b>57</b>	<b>48</b>	<b>35</b>	<b>36</b>	<b>40</b>	<b>57</b>	<b>37</b>	<b>54</b>	<b>74</b>	<b>91</b>	<b>126</b>	<b>787</b>
<b>Grand Total</b>		<b>393</b>	<b>202</b>	<b>152</b>	<b>115</b>	<b>115</b>	<b>145</b>	<b>220</b>	<b>191</b>	<b>196</b>	<b>265</b>	<b>336</b>	<b>402</b>	<b>2732</b>

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. Ramakrishna (2014) ABDAR (2015), JHA and SINGH (2007), (2008), Pulle (2000), Ansari (1993), Chakraborty (2004), SREELATHA (2007), SAHU *et al.* (2007), PATEL *et al.* (2015).

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