



# Quantitative analysis of phytoplankton of Ghagardara dam, District Nanded, Maharashtra, India

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## ABSTRACT

The present study was conducted to the Quantitative Analysis of Phytoplankton of Ghagardara Dam of Kandhar Taluka in Nanded District, Maharashtra, India. During the year June 2017 to May 2018. Presently 4367 Phytoplankton genera representing various groups, 24 species of Chlorophyceae, 17 species of Bacillariophyceae, 07 species of Euglenophyceae, 15 species of Cyanophyceae. Among Phytoplanktons particularly Chlorophyceae was the dominant group throughout the study. The highest count of 716 species was record in the month of May.

**Keywords:** Ghagardara dam, Phytoplankton, Chlorophyceae, Bacillariophyceae, Euglenophyceae.

## INTRODUCTION

The Phytoplankton diversity and density is controlled by water quality and other biotic communities in a water body (Reid and Wood, 1976). Phytoplankton functions as the primary producers in the aquatic biotopes. Hence the quality and quantity of Phytoplankton population bear much influence on the production potential of an aquatic ecosystem. The Phytoplanktons are the most sensitive floating communities which is being the first target of water pollution, thus any undesirable changes in aquatic ecosystem affects diversity as well as biomass of plankton community (Summarwar, 2012). The Phytoplanktons constitute bulk of primary producers and are the base of food chain in every water body (Belkhode, 2016). Phytoplankton is an important source of carbon in Photosynthesis activity to the aquatic ecosystem. It is primary producer and first link to in life which depend on it for food purpose. In food chain it helps as a source of oxygen (Pawar, 2017a, 2017b, 2018a, 2018b, 2018c, Sharma *et al.* 2015, Summarwar, 2012) plankton plays an important role in an aquatic environment. If maintains the food chain of aquatic ecosystem. If the quantity of floating plankton increases on surface of water it turns to water pollution and affects on planktonic diversity as well as biomass of the plankton. Basically some elements are most important for the phyto-

plankton like phosphate, silicates and nitrogen which is directly correlated with amount of phytoplankton. This proves that the compactness of phytoplankton is parallel to fishery production in aquatic ecosystem (Nilgule *et al.* 2016). Phytoplankton shows any changes due to natural and human activities it directly effects on aquatic food chain. Phytoplankton are eaten by Zooplankton, aquatic insects, fish and other organisms (Pawar, 2017a, 2017b, 2018a, 2018b, 2018c).

The present investigation has been undertaken to study a quantitative analysis of Phytoplankton in Ghagardara Dam. Qualitative and quantitative analysis of Phytoplankton assessment were carried out. The Ghagardara Dam is an earthen pond 315 m. in length with maximum height 19.84 m. Full tank level (FTL) 468.70 m. and maximum water level (M.W.L.) 471.20 m. The water of dam is one of the most important aquatic resources. The water of dam is used irrigation, fish culture and drinking purposes. Hence qualitative and quantitative studies of Phytoplanktons are of great importance in dam water body.

## MATERIAL AND METHODS

The water samples for phytoplankton analysis were collected from the dam for a period of 12 months starting from June 2017 to May 2018. The sample was collected with the help of plankton net. The sample was taken in 500 ml. bottle and preserved in 4% formalin. The samples were collected monthly in the

morning between 6:00 A.M. to 9:00 A.M. The quantitative and qualitative analysis was carried out by taking 20 m/s of concentrate obtained by siphoning the super ant liquid. Identification of phytoplankton in different class of different genera was carried out under research microscope. Phytoplanktons were counted by drop count method and the results were converted to organisms per ml of water. The identification was done up to generic level as described by Fritsch. (1956), Desikachary (1959) and APHA (2005), Dixit (1936).

## RESULTS AND DISCUSSION

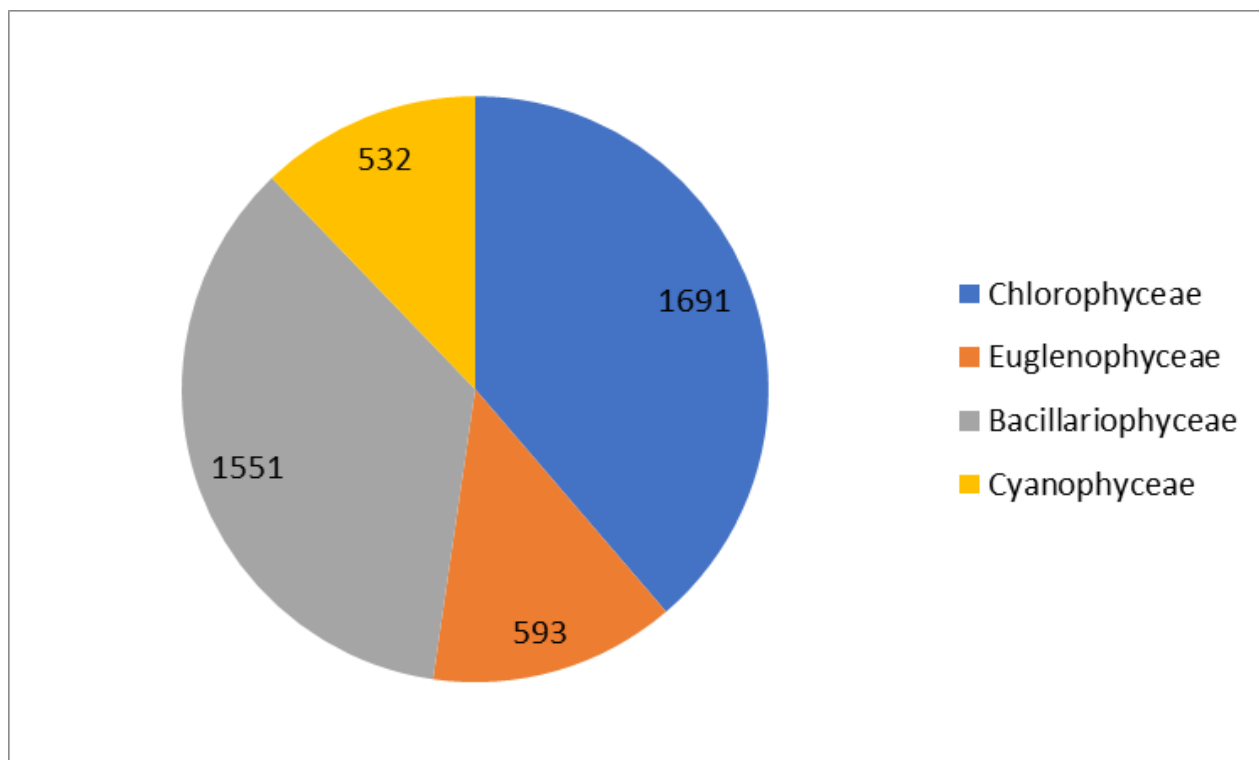
The total number of phytoplankton and monthly average phytoplankton number per ml are given Table. The prominent group of phytoplankton identified during present study was chlorophyceae, cyanophyceae, Bacillariophyceae and Euglenophyceae. The list of phytoplanktons observed is given below:

### 1) Chlorophyceae :

*Micrasterias species, oedogonium patulum, pediastrum duplex, pediastrum duplex, pediastrum simples, scenedesmus armatus, scenedesmus carinatus, scenedesmus obliquus, spirogyra, Ankistrodesmus falcatus, chlamydomonas conferta, chlorella conglanerata, chlorella ulgoris, cladophora, closteridium limmeticum, cosmarium contractum, Helimeda species, Hydrodictyon, Ulothrix Zonta, Ulothrix gonata, Zygnema species, Pleurococcus sp., Stigeochaete sp., Pithophora.*

**Table 1: Month wise Quantitative Analysis (No/Lit) of Different Phytoplankton groups of Ghagardara Dam During the Year June 2017 to May 2018.**

Phytoplankton Group	Monsoon Season				Winter Season				Summer Season				Total
	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	
<b>1</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>
<b>Chlorophyceae</b>	103	81	49	38	80	114	135	179	198	215	229	270	<b>1691</b>
<b>Euglenophyceae</b>	39	32	21	29	37	32	27	23	75	82	91	105	<b>593</b>
<b>Bacillariophyceae</b>	72	64	39	36	57	107	169	215	228	172	168	224	<b>1551</b>
<b>Cyanophyceae</b>	56	35	26	22	28	68	36	21	18	30	75	117	<b>532</b>
<b>Total Phytoplankton</b>	<b>270</b>	<b>212</b>	<b>135</b>	<b>125</b>	<b>202</b>	<b>321</b>	<b>367</b>	<b>438</b>	<b>519</b>	<b>499</b>	<b>563</b>	<b>716</b>	<b>4367</b>



**Figure 1: Different Phytoplankton Groups in Ghagardara Dam. During the Year June 2017 to May 2018.**

## 2) Cyanophyceae :

*Merismopedia punctata, microcystis aeruginosa, Notoc, Phormidium mucoid, Phormidium tenue, Oscillatoria irriguda, Oscillatoria foreau, Oscillatoria chlorine, Oscillatoria limosa, Anabaena bekkii, Anabaena constricta, Anacystis species, Aphanotheca nidulanus, Gloeocapsa sp., microcystis.*

## 3) Bacillariophyceae :

*Fragillaria capurina, Navicula gracills, N. radiosa, N. Viridula, Nitzschia subtilis, N. recta, N. vermicularis, Achanthes exigua, A. exilis, A. hungarica, Synedra affinis, Bacillaria paradoxa, Diatom sp., Diatom vuloare, Synedra ulna, cyclotella sp., Rhopalodia sp..*

## 4) Euglenophyceae :

*Euglena stellata, Euglena acus, Euglena granulate, Euglena viridis, Euglena pisciformis, Euglena acus, Euglena anabaena var. minima.* The monthly variations in the density of different group of phytoplankton is shown in the table.

The present observation is similar to those observation made by other workers. Somani and

Pejaver (2003), Bhagat and Meshram (2007), Khapekar and Patil *et al.* (2008), Shankarsan and Jameson (2006), Ugale *et al.* (2005). Telkhade *et al.* (2009), Shaikh *et al.* (2012), Chauhan and Lanjewar (2016), Belkhode and Sitre (2016).

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