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## Review Article

# Checklist of Phytoplankton in the Chandloi River Kota Rajasthan India

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### ABSTRACT

The study presented a checklist of Phytoplankton recorded from River Chandloi District Kota Rajasthan, India. It listed five families, twenty eight genera, forty three species of fresh water phytoplankton found in the river in different seasons. This study was conducted for two years that is May 2017 to April 2019. This checklist from the River Chandloi is prepared for the first time. The study also discussed dominance and abundance of the listed species.

## Introduction

Phytoplankton is free floating unicellular, filamentous and colonial autotrophic forms of aquatic habitat whose movement is more or less dependent on water currents. Phytoplankton's occurrence and dynamics in rivers are mainly based on physico-chemical conditions and nutrient availability in water. They are not only serving as food for aquatic animals, but also play an important role in maintains the biological balance and quality of the aquatic ecosystem. The phytoplankton of an aquatic ecosystem is central to its normal functioning. While they constitute the starting point of energy transfer, they are highly sensitive to externally imposed changes in the environment (Khattak *et al.*, 2005; Eletta *et al.*, 2005). Thus the species composition, biomass, relative abundance, spatial and temporal distribution of these aquatic biota are an expression of the environmental health or biological integrity of a particular water body. Phytoplankton fixes solar energy and carbon through photosynthesis making it available for higher trophic levels (Auer *et al.*, 2004). The magnitude and dynamics of phytoplankton are increasingly considered as bioindicators to assess the trophic status of an aquatic ecosystem.

The qualitative and quantitative studies of phytoplankton have been successfully utilized to assess the quality of water. Several species have served as bio- indicators and it is a well suited tool for understanding water pollution studies. Phytoplankton are consumed by zooplankton and facilitate the conversion of plant material into animal tissue and in turn constitute the basic food for higher animals including fishes, particularly their larvae. In this way, Plankton are the basis of aquatic food chain and food webs.

## Materials and methods

Chandloi River is a left bank tributary of Chambal River. It originates near Aalania village and meets the River Chambal near Mawasa village. The river flows nearly 90 Km before entering Chambal River.

The studies were continued for a period of two year from May 2017 to April 2019. Phytoplankton samples were collected during early morning on monthly basis from five different locations. 10 liters of water sampled from different areas and depths of the river was filtered through 25 micron mesh plankton net. The collected sample was then concentrated in 30 ml receptacle glass tube, attached at the end of the plankton net. Plankton samples were then preserved in phosphate buffered formalin at 3% concentration along with one drop of glycerine. After that the preserved samples were kept in refrigerated condition for further analysis. Plankton was identified up to generic level following earlier documented plankton identification key and monographs. The total number of organisms per millilitre for each sample was determined by simple calculation after counting the number in the 5 ml sub-sample examined. Plankton identification up to genus level was performed by using standard identification key (Taylor, *et al.* 2007; Dillard 1999).

## Result and Discussion

During the study period (May 2017 to April 2019) species were taxonomically identified and listed in table - 1. It is clearly visible in table that River Chandloi has a good diversity composed of five classes of phytoplankton, namely

Cyanophyceae, Chlorophyceae, Euglenophyceae, Bacillariophyceae and Dinophyceae. Class Cyanophyceae represented by five genus and seven species. *Aphanacaps delicatissima* and *Chroococcus cohaerens* species are rare in river because they found only last two sites remaining are common species because they found almost each 5 sites. Class Chlorophyceae represented twelve genus and seventeen species. In all species *Staurastrum comptum* is rare and two species *Staurastrum limneticum* and *Treubaria*

*triappendiculata* are endangered, remaining are common. Class Euglenophyceae represent by three genus and ten species. *Trachelomonas lacustris* and *T. hispida* are rare in all species. Class Bacillariophyceae represented five genus and six species. In all species *Cydotella kutzingiana* is rare and remaining are common. Class Dinophyceae represented three genus and three species. Each genus has one species. Species *Peridinium bipessteia* is rare species *Didinium bolbianii* is endangered and species *Oodinium limneticum* is common.

**Table 1:** Phytoplankton of Chandloi River, district Kota (2017-19)

S.N.	Class	Genus and species	S1	S2	S3	S4	S5	Abundance
1.	Cyanophyceae	<i>Anabaena circularis</i>	+	+	+	+	+	C
		<i>Anabaena subcylindrica</i>	+	+	+	+	+	C
		<i>Oscillatoriatenus agardh</i>	+	+	+	+	+	C
		<i>Oocystis eremosphaeria</i>	+	+	+	+	+	C
		<i>Oocystis solitaria</i>	+	+	+	+	+	C
		<i>Aphanacaps delicatissima</i>	-	-	-	+	+	R
		<i>Chroococcus cohaerens</i>	-	-	-	+	+	R
2.	Chlorophyceae	<i>Scenedesmus quadricauda</i>	+	+	+	+	+	C
		<i>Scenedesmus bijuga</i>	+	+	+	+	+	C
		<i>Ankistrodesmus falcatus</i>	+	+	+	+	+	C
		<i>Microspora floccosa</i>	+	+	+	+	+	C
		<i>Coelastrum sphaericum</i>	+	+	+	+	+	C
		<i>Hyalodiscus sp.</i>	-	+	+	+	+	C
		<i>Closterium setazeum</i>	-	+	+	+	+	C
		<i>Cosmarium sp.</i>	-	+	+	+	+	C
		<i>Staurastrum comptum</i>	+	-	-	+	+	R
		<i>Staurastrum limneticum</i>	+	-	-	+	+	E
		<i>Staurastrum trifidum</i>	+	-	-	+	+	C
		<i>Staurastrum sp.</i>	+	+	+	+	+	C
		<i>Gonatozygon monotaenium</i>	-	+	+	+	+	C
		<i>Chlorosarcina minor</i>	-	-	-	+	+	C
		<i>Sphaerocystis schroeteri</i>	-	+	+	+	+	C
<i>Treubaria triappendiculata</i>	+	+	+	+	+	E		
<i>Treubaria crassispina</i>	+	+	+	+	+	C		
3.	Euglenophyceae	<i>Euglena caudate</i>	+	+	+	+	+	C
		<i>Trachelomonas lacustris</i>	-	-	-	+	+	R
		<i>T. ensifera</i>	+	+	+	+	+	C
		<i>T. tambowica</i>	+	+	+	+	+	C
		<i>T. horrida</i>	-	+	+	+	+	C
		<i>T. similis stokes</i>	+	+	+	+	+	C
		<i>T. hispida</i>	-	-	-	+	+	R
		<i>Phacus longicauda</i>	+	+	+	+	+	C
		<i>P. suecicus</i>	+	+	+	+	+	C
		<i>P. orbicularis</i>	+	+	+	+	+	C
4.	Bacillariophyceae	<i>Synedra fuscilata</i>	+	+	+	+	+	C
		<i>Cyclotella comta</i>	+	+	+	+	+	C
		<i>C. kutzingiana</i>	-	-	-	+	+	R
		<i>Stephanodiscus hantzschii</i>	-	-	-	-	-	-
		<i>Suireria tenera</i>	+	+	+	+	+	C
		<i>Tabellaria sp.</i>	+	+	+	+	+	C
			+	+	+	+	+	C
5.	Dinophyceae	<i>Peridinium bipessteia</i>	-	-	-	+	+	R
		<i>Didinium bolbianii</i>	-	-	-	-	+	E
		<i>Oodinium limneticum</i>	+	+	+	+	+	C

### Conclusion

A total of 43 species of 28 genera, belonging to 5 families were identified during the study. The Class Chlorophyceae was the most abundant with 17 species belonging to 12 genera. On the other hand Class Dinophyceae found lowest rank among all families with 3 species belonging to 3 genera.

most abundant with 17 species belonging to 12 genera. On the other hand Class Dinophyceae found lowest rank among all families with 3 species belonging to 3 genera.

Taxa richness was highest in site 4 and 5 with highest values, while the lowest taxa richness were recorded in site 1 and 2 respectively.

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