

## Fresh water algal diversity of Purna river from four sites in Parbhani district Maharashtra

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### Abstract

In this study of algal diversity Cyanophyceae, Chlorophyceae and Bacillariophyceae members were recorded from Purna River, Sub-basin of Godavari River in Parbhani district Maharashtra. The colonial, filamentous, non-filamentous algal genera were recorded in winter summer and rainy season. Different algal mats were analysed. In all 24 algal taxa were recorded from four sites i.e. Amberwadi, Bamni, Vazer and Kawada along with three classes with 16 genera distributed in 11 families were recorded. Important members were recorded i.e. *Oscillatoria*, *Phormidium*, *Merismopedia*, *Aphanocapsa*, *Spirulina*, *Aphanothece*, *Microcystis*, *Rizoclonium*, *Calothrix*, *Scytonema*, *Oedogonium*, *Cosmarium*, *Chara*, *Chlorella*, *Hydrodictyon*, and *Spirogyra* members were recorded. Total 14 sp. were common in this four site as well as these genera were dominant. In this study Amberwadi site get more algal specimen as compared to other sites.

**Key words:** Algal mats, Chlorophyceae, Cyanophyceae and Maharashtra.

### Introduction

Algae are the principle primary producer, photosynthetic thallophytes, usually microscopic, unicellular and colonial or multicellular, filamentous free floating non-motile or motile organisms. Different forms of algal cause the turbidity of water and algal blooms (Kumar et.al. 2014). The algal diversity is determined by the level of richness of species and their functional importance in ecosystem. Depending on the seasons the algae appeared and disappear (Arulmurugan et.al. 2011). The phytoplankton is microscopic algae suspended in water which show the significant link between the food chain and food web. Phytoplankton plays a key role as the primary producer in aquatic environment is the 1<sup>st</sup> component in the tropic level (Pawar and Sonawane 2011). Microalgae are the major O<sub>2</sub> producer and they have been ascertained as promising and commercially important in the food industry and aquaculture, as a natural source of high-value products such as fatty acids, carotenoids, steroids etc. (Mohanapriya and Geetharamani 2014). The Yeldari dam is surrounded by agricultural land of different types of crop were also taken from this area. Other crops are cultivated throughout the year because of availability of water throughout the year. Still now so many workers did the study on algal biodiversity i.e., Nandan and Ahuja (2010), Shaikh and Bhosle in (2012), Shrestha et.al. in (2013), Bhatnagar and Bhardwaj (2013), Kumar et.al. (2013) and Gupta and Kulkarni (2014), Ambika and Krishnamurthy (2016).

This investigation is a humble effort to know the species diversity and richness of algal flora of Purna river in India. The present study is the part of investigation undertaken on the algal flora of Purna river is the sub-basin of Godavari river in Parbhani district Maharashtra, India.

### Study area

The river Purna is the tributary of Godavari river. This river is very beneficial to Parbhani district for the irrigation, fish culture and for the drinking purpose point of view. Yeldari dam is located on river Purna. The Purna river is a tributary of Godavari river originating in the Ajanta range of hills in Maharashtra. This enormous catchment area is often tagged as a sub-basin of Godavari river and along with its tributaries forms a dendritic drainage pattern. (Mulani and Sonule 2015).

## Materials and Methods

In this survey of algal diversity algal samples were collected from Ambervadi, Kawada Bamani and Vazar water area by Random sampling technique with the help of needles forceps, net and directly by hands from different sites. In which most of the samples were collected from agricultural lands and Basin of Purna River (Mulani and Sonule 2015).

### Sampling and Morphological study

Algal growth was observed in marginal side, submerged in water, free floating and attached form in water body. Collections of samples were done during the morning period in clean polythene bags and in sample bottles. The collected fresh algal samples were used for the algal identification and remaining ones were preserved in 4% formalin. For the microphotography temporary slides were made by using 10% glycerin. Microphotography was done by of Digi camera with light microscope. Identification of samples was done with the help of standard literature (Desikachary 1959, Anand 1989, Prescott 1951, Ragland et.al. 2014).

## Results

Site 1 -Amberwadi; Site 2Bani; Site 3 – Kawada; Site 4 - Vazar.

Table no. 01 Identified algal specimens from four sit

Sr. no.	Name of the alga	Site 1	Site 2	Site 3	Site 4
1	<i>Oscillatoria curviceps</i>	+	+	+	+
2	<i>Oscillatoria lutea</i>	+	+	+	+
3	<i>Oscillatoria irrigua</i>	+	+	+	+
4	<i>Oscillatoria acuta</i>	+	+	+	+
5	<i>Spirulina laxissima</i>	-	-	-	+
6	<i>Aphanocapsa grevillei</i>	+	+	+	-
7	<i>Merismopedia pulverea</i>	-	+	-	+
8	<i>Phormidium ambiguum</i>	+	+	+	-
9	<i>Aphanothece caldarionum</i>	+	-	-	-
10	<i>Microcystis aeruginosa</i>	+	+	+	+
11	<i>Rhizoclonium fontinale</i>	+	+	-	+
12	<i>Scytonema bohneri</i>	+	-	-	+
13	<i>Calothrix fusca</i>	-	-	+	-
14	<i>Oedogonium capillare</i>	+	+	+	+
15	<i>Cosmarium reniforme</i>	+	+	-	-
16	<i>Chara zeylanica</i>	+	+	+	+
17	<i>Chlorella vulgaris</i>	+	+	+	+
18	<i>Hydrodicton reticulatum</i>	+	+	+	+
19	<i>Spirogyra dubica</i>	+	+	+	+
20	<i>Spirogyra ellipsospora</i>	+	+	+	+
21	<i>Spirogyra juergensii</i>	+	+	+	+
22	<i>Spirogyra crassa</i>	+	+	+	+
23	<i>Spirogyra hyalina</i>	+	+	-	+
24	<i>Spirogyra lagerheimini</i>	+	+	+	+
		<b>21</b>	<b>20</b>	<b>16</b>	<b>19</b>

**Discussion**

This is the 1<sup>st</sup> algal diversity report from Purna river from Parbhani district Maharashtra. In this study total 24 algal genera were recorded from class Cyanophyceae and Chlorophyceae with 12 families and 16 genus along with 24 species. From class Cyanophyceae genus *Oscillatoria*, *Phormidium*, *Spirulina* belongs from family *Oscillatoriaceae*, *Aphanocapsa*, *Merismopedia*, *Microcystis*, *Aphanothece* were belongs from family *Chroococcaceae*, *Calothrix* belongs from family *Rivulariaceae*, *Scytonema* belongs from family *Scytonemataceae*. From class Chlorophyceae *Oedogonium* belongs from family *Oedogoniaceae*, *Hydrodicton* belongs from family *Hydrodictaceae*, *Cosmarium* belongs from family *Desmidiaceae*, *Spirogyra* belongs from family *Zygnemataceae*, *Rizoclonium* belongs from family *Cladophoraceae*, *Chara* belongs from family *Characeae*, and *Chlorella* belongs from family *Chlorellaceae*. In this total investigation maximum taxa of *Oscillatoria* and *Spirogyra* were recorded means there is richness of these two species. The maximum numbers of algal specimens were recorded from site Amberwadi with 22 algal species followed by Bamni with 21, kawada 16 and Vazar 19 specimens. In this all the study *Oscillatoria* and *Spirogyra* genus is most dominant as compare to other algal specimens.



**Fig.1 Collection sites a-Bamni, b-Amberwadi, c-Bamni, d-Vazer and e-Kawad**



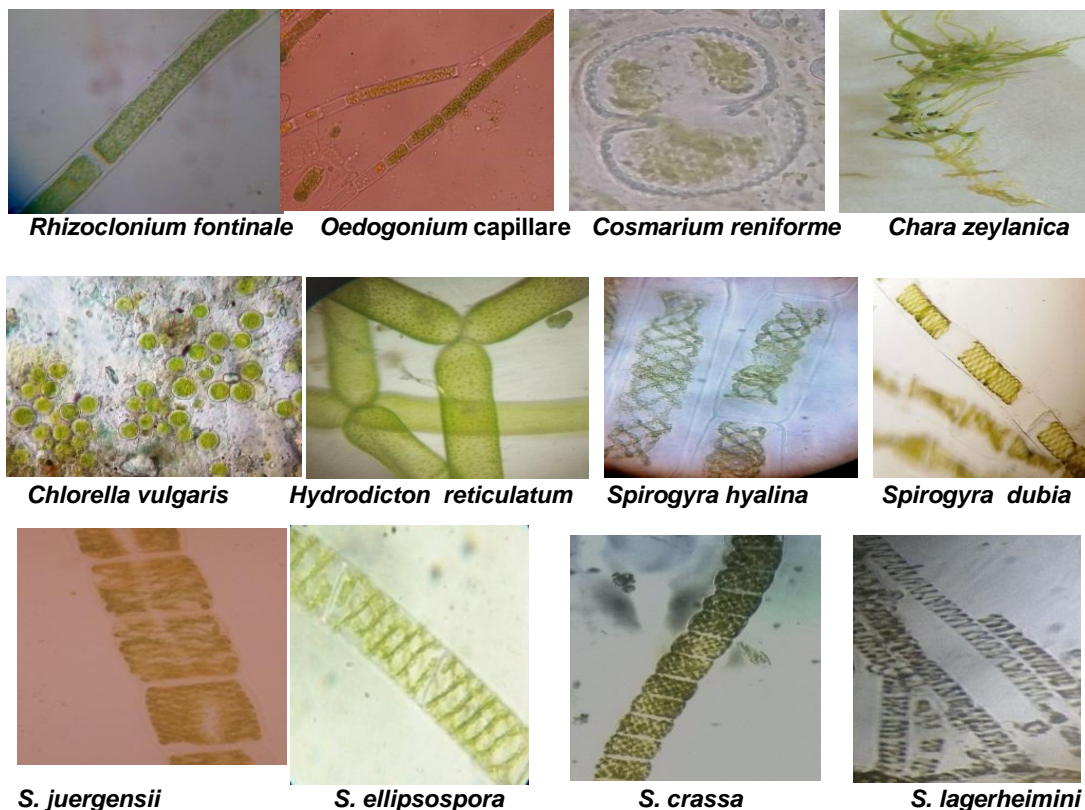


Fig.2 Identified algal genera from four sites (magnification 10 x 40 = 400 except Chara zeylanica which was taken using mobile camera 13 MP)

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