



PHYCOFLORA OF RIVER ECOSYSTEM

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ABSTRACT

The present research constitutes the study of fresh water ecosystems Katepurna and Uma river. The rivers were screened for its algal biodiversity. The survey for different algal members were carried out with collecting water samples from both the rivers in the month of January and February 2020. In the samples, dominance and frequency of members of Chlorophyceae were recorded maximum. The minimum number of members of algal groups such as Phaeophyceae and Bacillariophyceae are recorded. The population of some generas viz, *Spirogyra*, *Ulothrix*, *Navicula* and *Cosmarium* were found abundently in both the rivers.

KEYWORDS: Katepurna River, Uma River, Chlorophyceae, Bacillariophyceae, Phaeophyceae.

INTRODUCTION

The river is an important freshwater aquatic ecosystem .It is rich in micro flora and fauna .The micro flora includes phytoplanktonic algae. Algae are a diverse group of aquatic plants. They are not highly differentiated as they lack true root, stem and leaves. The vascular system is not developed but they circulate water and nutrients throughout their bodies. Many types of algae are used as an alternative source of food for human beings and fodder for cattles. They are used variously in agriculture crop production, in making of medicines and biodiesel. The members of algae are important to us by various ways such as fish culture, recreational purpose. They are also used as biofertilizers in crop improvement programmes. It also serves as an important tool for researchers in nanotechnology, space biology, genetics and other fields of applied sciences.^[1] The phycoflora consists of many different types of algae found in water habitat .The phycoflora is used to develop a floristic chart and database of the freshwater ecosystems. The work on Chlorophyceae members are well documented from time to time all over the world.^[2,3,4,5] The algae shows different range of thallus structures they may be unicellular or multicellular. It may be epiphytic, endophytic, coenobial, Palmelloid, Dendroid etc. he algal data collected is useful in the study of molecular phylogeny. The algae composed of varied types of photosynthetic pigments and reserve food material. The pigments may be green, yellow, yellow brown red blue green etc. The chloroplast in algae varies in shape and number depending upon the type of algal species The photosynthetic pigment, reserve food material,

flagellation are important criteria of classification and identification of algae. Considering the importance of algae and its applicability to us present study of survey is attempted to findout types of algae dwelling in river ecosystem.

MATERIALS AND METHODS

Site of study: Kurankhed is a village in Akola district in Vidarbha region of Maharashtra state in India. It is situated on the bank of river Katepurna. The katepurna river is a tributary of Purna river that flows through the central part of Akola district. It flows about 97 km length. It is located at 20°28'53" N and longitude 77°09'24" E. Its drainage basin area is of 1160sq.cm. and latitude 20°46'50"N.^[6] There is a another river named as Uma river it flows to a length of about 60 km and rises in vidarbha region of state.

Collection of sample: The samples from both Katepurna and Uma rivers were collected in the month of January and February – 2020. The sampling sites were selected carefully so as to get maximize number of algal flora growing in the varied habitats. The samples were taken at random from different places of each river. The water sample were taken from upto a depth of one to two feet in water with the help of plankton net having size 0.5 mm. The algal samples were kept in container containing water and Formalin Acetic Acid. The samples were brought to the laboratory and kept in shady dry place for further analysis.

Preservation of samples: The algal samples was preserved in plastic containers containing water and 5% FAA to avoid degradation and disintegration of living tissues.

Preparation of glass micro slides: 01 ml of each sample were taken in a glass vial. The temporary mount preparation was made by taking drop by drop of sample on clean glass microslide. The sample was then stained with safranin and Iodine as and when it is required. The mounting was done in mounting medium glycerine. The slide was then observed under compound microscope with low and high magnification objective lenses.

Identification of phycoflora: The identification of algal members were carried out individually with the help of different criteria used for the classification and identification of algae. The algal members were grouped as per the classification system of Frisch. The criteria

used for identification of algae were colour of photosynthetic pigment, structure of chloroplast, presence or absence of flagella type and number of flagella etc.

RESULTS AND DISCUSSION

The survey of algae was conducted to study the biodiversity of two rivers Katepurna and Uma river. The algal samples were collected from different sites of river and analysed for the presence of kind of algal members. Many algal members from the samples were collected and identified from the two rivers separately. The algal members found from Katepurna river are recorded as per Table no.1. Different types of algae are recorded from the sites. The variation in population of algal members were observed. Many forms of algae were noted such as unicellular, colonial, filamentous, non - filamentous.

Table 1: List of different algal members found in Katepurna river.

S.N.	Name of the Genus	Population / ml of sample	Family of the Genus	Order
1	<i>Cosmarium</i>	56	Desmidiaceae	Conjugales
2	<i>Ulothrix</i>	73	Ulotrichaceae	Ulotrichales
3	<i>Volvox</i>	33	Volvocaceae	Chlamydomonadales
4	<i>Spirogyra</i>	95	Zygnemataceae	Zygnematales
5	<i>Zygnema</i>	28	Zygnemataceae	Zygnematales
6	<i>Oedogonium</i>	19	Oedogoniaceae	Oedogoniales
7	<i>Ectocarpus</i>	19	Ectocarpaceae	Ectocarpales
8	<i>Chara</i>	13	Characeae	Charales
9	<i>Pediastrum</i>	11	Hydrodictyaceae	Chlorococcales
10	<i>Chlorella</i>	25	Chlorellaceae	Chlorellales
11	<i>Euglena</i>	22	Euglenaceae	Euglenales
12	<i>Navicula</i>	12	Naviculaceae	Naviculales

In Katepurna river about 12 different algal members were recorded. They were from the major groups of algae like Chlorophyceae, Bacillariophyceae and Phaeophyceae. It is observed that the members of chlorophyceae were dominant. The algal group Chlorophyceae is highly distinctive group found in almost all fresh water habitats. In India it has been described by many workers from time to time.^[7,8,9] The

algal forms like *Spirogyra* has shown maximum number and *Pediastrum* minimum number of population.

About 10 members of algae were recorded from Uma river as shown in Table no. 2. The members identified were from the two major groups like Chlorophyceae and Bacillariophyceae. In the Uma river there found dominance of Chlorophyceae algal members.

Table 2: List of different algal members found in Uma river.

S.N.	Name of the Genus	Population / ml of water sample	Family of the Genus	Order
1	<i>Cosmarium</i>	70	Desmidiaceae	Conjugales
2	<i>Ulothrix</i>	85	Ulotrichaceae	Ulotrichales
3	<i>Volvox</i>	45	Volvocaceae	Chlamydomonadales
4	<i>Spirogyra</i>	90	Zygnemataceae	Zygnematales
5	<i>Zygnema</i>	46	Zygnemataceae	Zygnematales
6	<i>Oedogonium</i>	35	Oedogoniaceae	Oedogoniales
7	<i>Chlorella</i>	28	Chlorellaceae	Chlorellales
8	<i>Chara</i>	15	Characeae	Charales
9	<i>Euglena</i>	39	Euglenaceae	Euglenales
10	<i>Navicula</i>	77	Naviculaceae	Naviculales

The population of *Spirogyra* and *Ulothrix* were found maximum as compared to other members of algae. The minimum number of population of *Chara* were recorded. It is observed that generally the members of Chlorophyceae are found abundantly in fresh water environment.^[10] The Chlorophyceae members are rich in cellulose and contains the grassy green chromatophores. They are rich source of starch and oil.^[11] The algae are renewable sustainable asset with economic sources of biofuels, bioactive compounds, medicinally important products and food ingredients.^[12]

CONCLUSION

The two fresh water ecosystems namely Katepurna and Uma rivers are possessing rich algal flora of members from different groups of algae. The population of members of green algae of the group Chlorophyceae are plenty as compared to other major groups of algae. Recently interest is developed worldwide among the researchers to work on algae due to its potential applications. The Katepurna and Uma river is freshwater and non polluted ecosystems that containing densely populated members of some algal groups. Both the rivers are rich in algal diversity.

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