SEASONAL VARIATION OF ALGAL FLORA OF ADRI RIVER OF AURANGABAD TOWN, BIHAR

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ABSTRACT

Present paper deals with the seasonal variation of algal flora growing in Adri river at Aurangabad town of Bihar. First report on this river for exploration and documentation of fresh water algae have been done by the authors. A regular seasonal collection has been made during several field trips between the period of January 2018 to December 2018. In total 35 genera belongs to four different classes viz , Cyanophyceae (12), Chlorophyceae (14), Bacillariophyceae(7) and Euglenophyceae (2) were identifie. All genera have been allotted to their suggested class. Important genera recorded were *Tetraspora, Botryococcus, Cladophora, Scenedesmus, Nostoc, Nodularia, Oscillatoria, Spirulina, Rivularia, Gomphonema* etc. It was observed that the green algae registered the highest number in summer season, diatoms in rainy season while blue green algae in winter season.

Keywords-: Algal Flora, Adri River, Aurangabad Town, Bihar.

INTRODUCTION

Algae are common and important inhabitant of aquatic ecosystems and it plays an important role as a primary producer. The term algae have been derived from a latin word Algae which means sea weeds. Algae are small autotrophic plant that fail to show any cellular differentiation and their sex organs are unicellular and if multicellular all cells are fertile. These lower plants are used as feed, fodder, fertilizer and medicines. A distinct seasonal pattern in algal composition in streams and rivers and an increase in algal species diversity and richness with increase in temperature upto 25-30 ^{0}C has been demonstrated in many studies. Squires *et al.* (1979), Wilde and Tilly (1981) reported a variation in periphyton diversity with seasonal changes mainly due to change in temperature. Diversity of phytoplankton are influenced by a number of factors like nutrient, physico-chemical parameters, carbon exchange and biological interaction (Rajagopal *et al.,* 2010). Studies on planktonic composition and physico-chemical characteristics of water are necessary to acquire basic knowledge on biodiversity status of waterbody (Bhatnagar and Bhardwaj 2013). The abundance of phytoplankton their seasonal and temporal variation are

regulated by several environmental factors like light, intensity, temperature, availability of nutrients, rate of respiration, rate of removal due to death, grazing by higher organization etc. (Kohler 1997; Hamaidi Chergai *et al.,* 2016). Present paper deals with the seasonal variation of algal flora of Adri river situated at the main town of Aurangabad District, Bihar. There is no any documentation and investigation of algal flora have been done yet before of the studied river.

MATERIAL AND METHODS

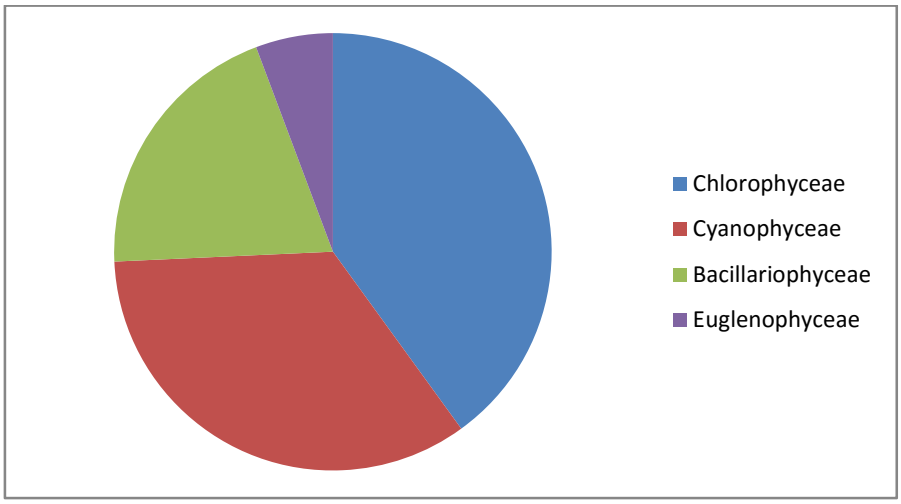
Aurangabad town is located in north east India on the NH 2(Grand truck road). Its nearest large town is Gaya 70 km to the east. The area of the town is 89 km^2. Aurangabad rest on alluvial plain on the bank of Adri river. Emergence of Adri river is from Barba Soi of Dumaria (Imamganj) of Gaya District and after passing through Aurangabad dist. it merges in Punpun river near Kharati (Obra). The river runs through several village of Deo block (Bluganj,Baranda,Rampur etc.) and Aurangabad block (Khardiha, Kanchan bigha, Khakhda ,Kharkani ,Mishri bigha, Kunda etc.). Algal specimen were collected seasonally from different habitats like free floating, running or attached form, muddy area etc. from the Adri river situated in town area of Aurangabad during the period of January 2018 to December 2018. Algal specimen were collected, thoroughly washed in tap water and proper care was taken according to the type of specimens. Temporary slides were prepared after staining with suitable stains observed under standard microscope. Camera lucida drawings and microphotographs were taken. Identification were rendered with the help of standard monographs eg. Desikachari (1959), Philipose (1967), Prescott (1984), Gajraj and Srivastava (1994), Prasad and Srivastava (2005).

RESULT AND DISCUSSION

The study of algae is useful in determining nature of water quality. It is to be noted that through there were 34.71% blue green algae taxa were found in this river a majority of them were polluting taxa (Palmer 1969). It was observed that the blue green algae were reached highest in the winter season and few genera like *Nostoc, Nodularia, Oscillatoria* and *Spirulina* were found in all the season. Out of these all taxa 40% algae was belongs to class Chlorophyceae and it is noted that green algae registered highest in number in summer season which causes odor and taste in water. In winter season the count of green algae also reached high number but less than summer season. Out of 35 taxa 20% is Bacillariophytes and It was observed that rainy season is the best season for development of Diatoms means it observed highest in rainy season in comparison to summer and winter season. There was only two genera of Euglenophyceae were observed which was *Euglena* and *Phacus* means 5.71% of total genera.

Table 1: Algal distribution in Adri river, Aurangabad Bihar in different season.

Algal (Genera)	Summer season	Rainy season	Winter season
Chlorophyceae (Class)			
Ankistrodesmus	+	-	-
Chlamydomonas	++	-	-
Tetraspora	++	+	+
Botryococcus	++	+	+
Chlorella	+	-	-
Cladophora	++	+	++
Closterium	-	-	+
Cosmarium	-	-	+
Hydrodictyon	+	+	-
Scenedesmus	++	+	++
Spirogyra	+	-	+
Oedogonium	+	-	+
Ulothrix	++	-	+
Zygnema	+	-	-
Cyanophyceae (class)	-	-	++
Anabaena	-	-	++
Arthrospira	+	-	++
Microcystis	+	-	+
Lyngbya	-	-	++
Nostoc	+	+	+++
Nodularia	+	+	++
Phormidium	+	-	-
Oscillatoria	++	+	+++
Spirulina	+	+	++
Rivularia	+	+	+++
Merismopodia	-	-	+
Agemenellum	+	-	+
Bacillariophyceae (class)			
Cyclotella	+	+	-
Fragilaria	+	+	-
Gomphonema	+	++	+
Melosira	+	+	-
Navicula	+	++	-
Nitizschia	+	+	-
Synedra	-	++	+
Euglenophyceae (class)			
Euglena	-	-	+
Phacus	+	-	+



Chlophyceae : summer > winter > rainy seasons

Cyanophyceae : winter > summer> rainy seasons

Bcillariophyceae : rainy > winter > summer seasons

euglenophyceae : summer = winter = rainy season

CONCLUSIONS

Algae vegetation of Adri river comprise mainly three classes Chlorophyceae, Cyanophyceae and Bacillariophyceae. The green algae grow maximum in summer season, Cyanophyceae grow maximum in winter season while Bacillariophycea grow maximum in rainy season. In summatively it was observed that winter season than summer and finally rainy season is favorable for growth of algae.

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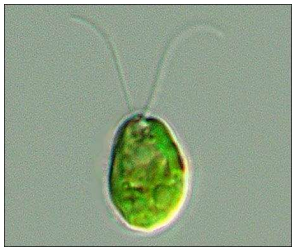
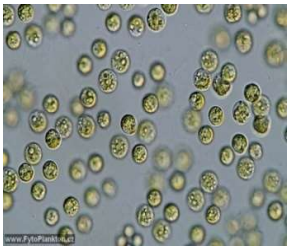
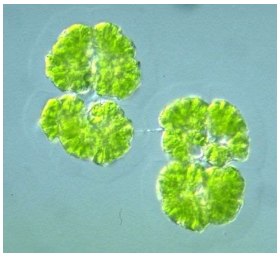
Ankistrodesmus



Chlamadomonas

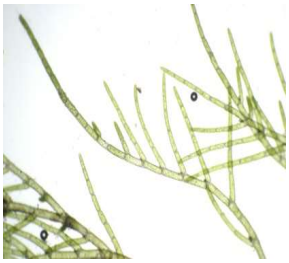


Tetraspora



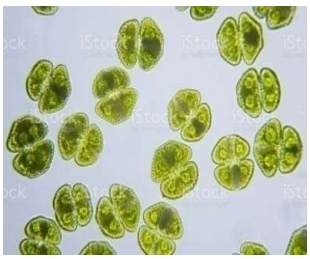
Botriococcus

Chlorella



Cladophora

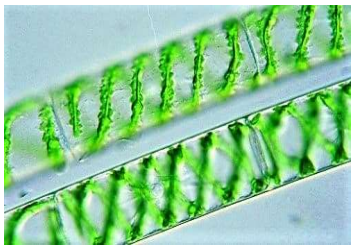
Closterium



Cosmarium

Hydrodictyon

Scenedesmus

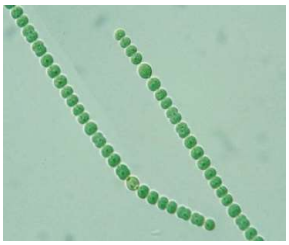


Spirogyra

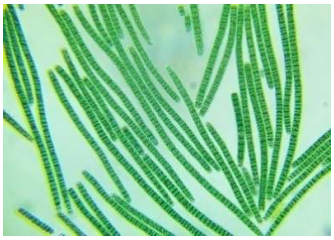
Oedogonium

Ulothrix

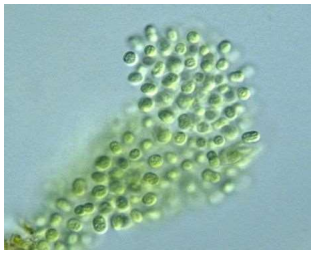
Zygnema



Anabaena



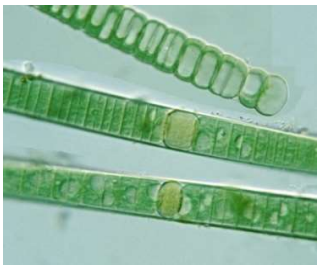
Arthrospora



Microcystis

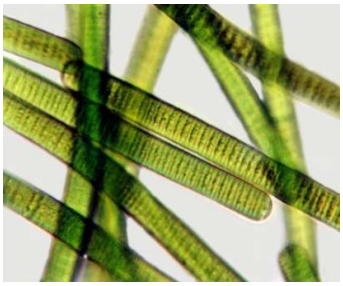
Lyngbya

Nostoc

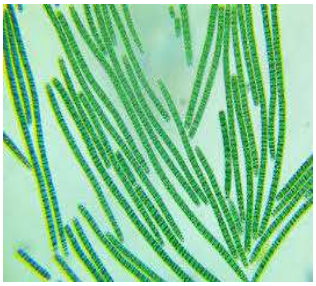


Nodularia

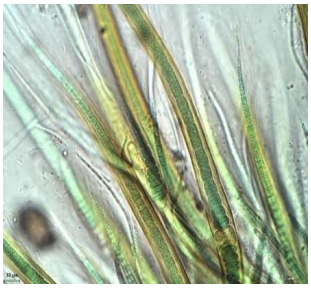
Phormidium



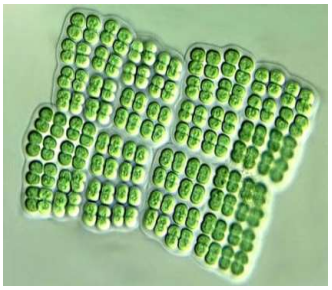
Oscillatoria



Spirulina



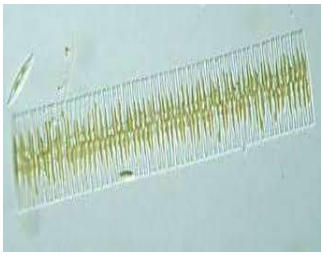
Rivularia



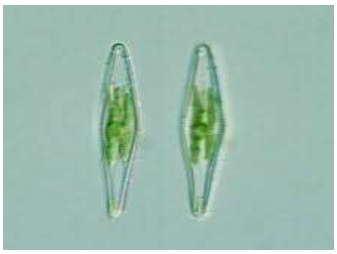
Merismopodia

Agemenellum

Cyclotella

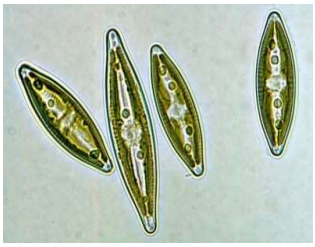


Fragilaria



Gomphonema

Melosira



Navicula

Ntizschia

Synedra

Euglena

Phacus

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