

Events and Succession of Freshwater Ecosystem of Wardha River

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Abstract

Initial events of biofilm development and succession were studied in a freshwater environment at Rajura Taluka of Chandrapur district. It was coal thermal power is an extremely way and generate biomass, algal density were noted time to time. The algal density thickness in biofilm, biomass and colonization was noted season wise. The colonization of algal biomass increases during summer (March, May and July 2013) as compare to other months. The initial colonization was composed of algae ie *Pediastrum* SPS and *Cyanobacteria* ie *Gloeocapsa* some diatoms, and also *Nitzschia amphibian* and *Gomphonema* sps.

From first period to next weeks there is development of filamentous green algae ie *Oedogonium* sp. *Stigeocloium tenue* and *Cyanobacteria*. Base on there development and growth of algal biomass different stages of biofilm and biomass can be noted time to time. the first phase dominated by green algae, the second phase of succession by diatoms and followed by third phase by *Cyanobacteria*, Seasonal variations observed.

Keywords:- Biomass, Biofilm, Colonization, Algae

Introduction:

The algae grown on the surface of sand filters as a gelatinous slimy film. It may be responsible for gradually reducing flow of water (Mathenion 1952). The planktonic algae are likely to be much more significant than the attached on benthic algae. Their higher concentration in the lake or reservoir affects the water quality (Laxminarayan,1965; Singh and Saxena ;1969). All the surfaces of water contain dissolved and suspended material. Some of these serve as nutrient and support growth of algae and other aquatic life (zafer, 1967)

The data of the periodicity of fresh water algal bodies collected by various investigators has been reviewed by BLUM (1965 P. 322-3)

Algae shows maximum development during summer. (CHAKRABARRY 1959, PHILPOSE, 1959 RICE, 1938) the algae shows development of minimum growth in winter (PHILPOSE 1955). The maximum algal development dominated by diatoms during winter months, in River Wardha at Rajura . The algae get maximum developmet in winter and summer. (LAKSHMINARAYA 1965) and (PAHWA 1966). They shows lowest number of development in rainy season.

The vast majority of algae one aquatic occurring on the surface of water and most habitat.

In this investigation, the paper deal with initial development and biofilm succession in algal density is period wise manner noted time to time.

Material and methods ‘-

The paper deals with the periodicity of algal populations at four different stations of River Wardha at Rajura over a period of two years.

For this study, the algal samples collected in period wise manner. Accurate sampling was carried out by handling. The presentation of samples to attain reliable results. In every weekly period and also in monthly period accurate sampling being done. All four sites selecting for experiments were used for sampling with the help of forceps. These algal samples brought to laboratory, the algal samples identifying with the help of monograph and recent literature (Desikachary, 1959). In every month same procedure repeated at four stations. The Phytoplankton analyzed was assigned to major groups viz. Green algae (*Chlorophyceae*) blue green algae (*Cyanophyceae*) diatoms (*Bacillariophyceae*) and *Euglenophyceae*. The period of two year taking for this investigation.

At the month of June-August, algal samples collected from one site by using forceps and slides were mounted by using glycerin remaining samples brought for culturing in laboratory. At the algal populations noted down at four different stations by same process.

At the month of September-November same process for algal population being done at four different stations at the month of September to November.

This process were repeated for the month of December to February and also in summer season in the month of March-May repeated. From this investigation algal populations, biofilm successions biomass formation were noted down. This investigations were done for two year plan.

Result and Discussion

It is seem that the algae, reach their maximum during winter (December-January) And touch minimum during the rainy season (September –November). The rate of water current is more or less inversely proportional to the total number of algae at all the stations.

High water temperatures seem to accelerate the growth and multiplication of *chlorococcales*. High concentration of nitrite and low dissolved oxygen (at station 4) seem to unfavorable for the development of algae.

At the stations of 1 and 2 Desmids were more in number because they favoured by high summer temperatures and total solids.

The algae attain their maximum development in winter i.e. Diatoms form the bulk of populations in winter season (December to January) It show minimum Development during summer (May)

and rainy season. It shows inverse relationship with temperature. The fluctuations in the silicates nitrates and phosphate seem to show in inverse correlation with diatoms periodicity which were favoured by higher concentrations of oxygen in the water. The higher concentration of dissolved oxygen in water lead to the formation of more nitrates and help in the production of dissolved oxygen in water lead to the formation of more nitrates and help in the production of large number of algae.

During summer season blue green algae attain maximum development and become rare in winter and rainy season, which show direct correlation with oxidizable organic matter and water temperature and also having inverse relationship with dissolved oxygen.

The blue green algae and *Euglenoid* flagellated show more development during summer. High temperature seem to be unfavorable for their development P^H of water shows an inverse relationship with the periodicity of these algae and total iron content goes with these flagellates.

Discussion:-

The investigation of initial development of algal biomass and algal biofilm development shows minimum and maximum development accordingly to season. According to LAKSHMINARAYANA (1965) and PAHWA and MEHROTRA (1966)

The phytoplankton occurred maximum development in season of winter to summer.

In the river of Wardha high population of development of algae have been recorded during winter (December to February) and algae show minimum During rainy season (June to August). This is more or less in agreement with Roy, 1955; PHILIPOSEI, 19590

The biological significance of rate of water current has been studied by many workers.

SCHRODER (1987) was point out the effect of rate of water current. The volume of water current is inversely proportional to phytoplankton (cf. KOFOID, op.cit ., p. 12)

According to BUTCHER (1932, p. 830), “.....The greater the current the more difficult it is for the algae on the river bed to retain their hold.....”

EDDY (1934) concludes that the velocity of current is one of the important factors controlling the age of water and emphasizes more on the stability of ecological conditions for phytoplankton production depending on it.

Wardha river was full of water in rainy season. In summer of season, the quantity of water were lowered & show more development of algal population in the winter season, there were seen maximum growth development in algal populations.

Conclusion:- The Wardha basin in Rajura locality shows diversity of algal populations at different stations of Wardh river. The Wardha basin show initial development is more number in during summer and winter and rare or less in number in rainy season.

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