

Studies on Algal Biodiversity of Tapti River in Burhanpur District of Madhya Pradesh, India

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Abstract: The present investigation was undertaken with a view to study algal biodiversity of Tapti river in Burhanpur District of Madhya Pradesh, India. The research work was performed during June 2015 to May 2017, Altogether 26 genera were identified and recorded from different sites of Tapti river during the two year period of investigation. Of these 13 genera belonged to Chlorophyceae, 06 genera belonged to Bacillariophyceae, 04 genera belonged to Cyanophyceae, 02 genera belonged to Charophyceae and 01 genera belonged to Euglenophyceae. The members of Chlorophyceae were dominant followed by Bacillariophyceae, Charophyceae and Euglenophyceae. Diversity of algae in terms of quantity and quality were observed at all selected sites of Tapti river. Unicellular, colonial and filamentous algal forms were reported throughout the period of investigation. The algal genera whose species records at all sites of study area were *Sizivogyra*, *Zygnema cosmarium*, *Nitzschia*, *Euglena*, *Chlorococcus*, *Oscillatoria* and *Shormidium* (see table :1 & table:2)

Keywords: Algal Biodiversity, Algal blooms, Burhanpur, Tapti river, Madhya Pradesh, India

1. Introduction

Algae are the most widespread and abundant photosynthetic life in aquatic as well as terrestrial ecosystem. Algae gain importance in the modern time not only as alternative potential source of protein for the hungry man but also as the primary source of food for aquatic animals. Palmer (1969), Trivedy and goel (1980) have reported different algal forms as an indicator of water pollution.

The accumulation of algae at or near source of the water is called as "Algal Blooms" or "mats". Review of literature reveals that the algal biodiversity in East Nimar is still in infancy. Therefore to fulfil this lacuna, it has been decided to work on algal biodiversity of Tapti river in Burhanpur District of Madhya Pradesh, India.

2. Materials and Methods

Fortnightly collection of water sample was done from all the 10 Sites (Before samshan ghat [S₁] Tapti river [S₁₀]) of Tapti river in Burhanpur, M.p India (See table:1) Physicochemical parameters were analyzed using standard methods of APHA (1998) and Khanna and Bhullai (2008). The algal sample collection carried out with the help of truncate cone shape plankton net the plankton net is made of

bolting Silk No. 25 Standard grade. This has aperture size of 0.64 mm. The Sample Was concentrated by Sedimentation method, removing this Supernatant by decanting and the desired final volume was obtained. For counting, 1 ml of Concentrated sample was taken and placed Sedgwick Rafter Counting cell following the Standard methods of APHA (1998). Trivedi And Goel (1986) and Chinson (1967) and Khanna and Bhutiani (2008) The Concentrated was preserved in U% Formalin for study (Wetch,1952). (See Table:1 & Table:2) Given Formula is used to calculate percentage.

$$\text{Percent} = \frac{\text{No. of gener} \times 100}{\text{Total No. of genera}}$$

Table: Sample Collected from to different Sites location.

S.No.	Source	Sample Location	Sites
01	Tapti river	Before Samshn ghat	S ₁
02	Tapti river	Shamshan ghat	S ₂
03	Tapti river	Nagzhiri ghat	S ₃
04	Tapti river	Rajghat	S ₄
05	Tapti river	Jainabad Bridge	S ₅
06	Tapti river	Satiyara ghat-1	S ₆
07	Tapti river	Satiyara ghat-2	S ₇
08	Tapti river	Big Pool Bridge	S ₈
09	Tapti river	Small Pool Bridge	S ₉
10	Tapti river	After Small Pool	S ₁₀

Table 2: Algal genera common 4 in water habitat of Tapti river in Burhanpur. District of Madhya Pradesh, India

S.No	Name of Algae / genera	Class	Total No. of genera	Percentage %
01	Chlorella, Cosmarium, oedogonium, Pediastrum, scenedesmus, Spirogyra, Ulothrix, Hydrodictyon, Chladophora, Ehlroroecoccus, Desmidium, Zygnema, and volvox	Chlorophyceae	13	50.0
02	Navicula, Nitzschia, Fragilaria, Pinnularia, Cymbelola. And eyelotella.	Bacillariophyceae	06	23.7
03	Oscillatoria, Spirulina, Nostoc, Phormidium	Cyanophyceae	04	15.3
04	Chara, Nitella	Charophyceae	02	7.6
05	Euglena	Euglenophyceae	01	3.8
Total	26	05	26	100.4

3. Results and Discussions

The information on algal biodiversity is essential in monitoring and management of a aquatic ecosystems.

The result & Discussions are summarized as below:-

- In present study overall 26 genera were record from five groups of algae i.e chlorophyeeac, Bacillariophyeeac, eynophyeeac, charophyeeac and eliglinophyeeac.
- Chlorophyeeac group Was dominant as it was represent by (13) genera, Becillariophyeeac(06) genera, eyanophyeeac (4) genera, charophyeeac (2) genera and euglenophyeeac (01) genera. (See Table:2)
- The composition of chlorophyeeac was greater in genera composition as compered to the other group of algae.
- Class wise percentage contribution study of algal genera reveals that light contribution was of chlorophyeeac (50.0%) followed by Becillariophyeeac (23.7%) eyanophyeeac (15.3%), chlorophyeeac (7.6%) and euglenophyeeac (3.8%).(See Fig:1 & Fig:2)
- During present inventigation it is observed that algal bloom formation starts in ther month of September reaching a peak in the month of November to January . The blooms exists up to may.
- Algal genera of 10 selected sites of Tapri river is very rich and it is found in diverse form. (See Table:1:)

4. Conclusion

• Algae Biodiversity Composition:

In present investigation algal genera such as vos marium, spirogura, sechedesmus, zygnema, ulothrix, pediatum, phoromidium, ascillatoria, spirulina, Fragilaria pinnularia, and eulena were dominant.

• Seasonal Variation:

Winter and slimmer reasons are found favocrable for the growth of algae.

• Pollution index:

For Pollution index study, Pollution tolerant genera of algae were recorded from all Sites of Study area. The Pollution tolerant genera which were recorded at all sites are euglena, Oscillatoria, Secnedesmus, promidium, spirogyra, and cosmarium.

• Algal genera of satnding and running water habitats:

Maximum algal forms were found at stauding water sites as compared to running water sites.

• Algal Blooms:

Algal blooms are cladophara, zygnema, Oscillatoria, phormidium and hydrodictyon

• Epiphytic Algal:

Algae epiphytic on aquatic angiosperms like cyperus sp. , ipomoea sp. And Typha sp. Were collected and observed. Ex. Ulothrix, Oedogonium pinnularia,

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Author Profile



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Tapti River Showing Selected Sites (Before Shamshan Ghat S1 To After Small Bridge S10)



Map of District Burhanpur Showing Sampling Sites (S1 To S10) in Tapti River



Algal Blooms



Floating Algae



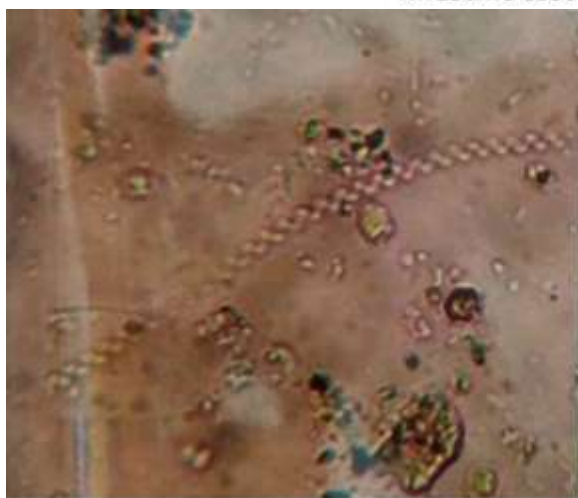
EPIPHYTIC ALGAE



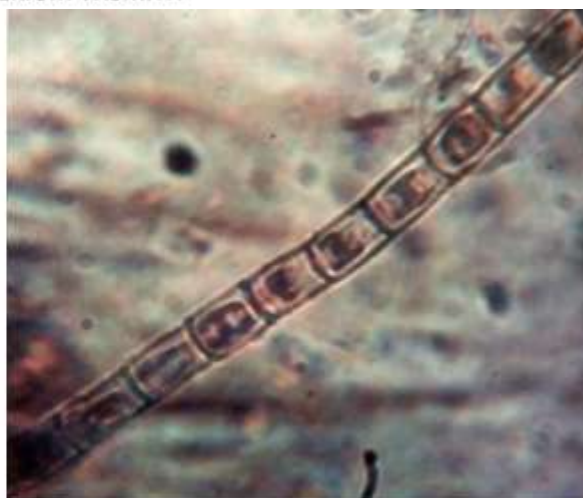
ALGAL POLLUTION



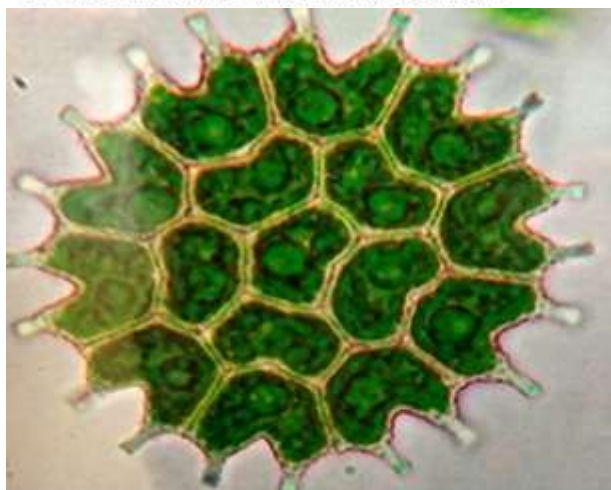
NITZSCHIC CLOSTERIUM W.SMITH



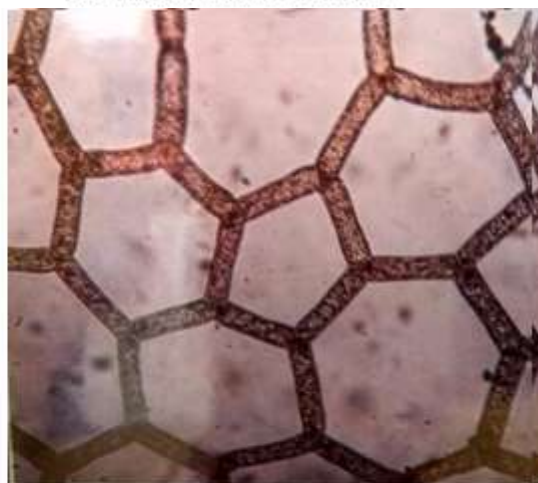
SPIRULINA MAJOR KUETZ EX GOMONT



ULOTHRIX SUBTILISSIMA RADENHORTS



PEDIASTRUM BORYANUM (TRUP.) MEHEGHINI



HYDRODICTYON RETICULATUM L. LAGERHEIM