

Studies on phytoplankton diversity in the river Gomti at Jaunpur (U.P.)

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Asian Journal of Environmental Science (June to November, 2009) Vol. 4 No. 1 : 78-80

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SUMMARY

The paper deals with an ecological study with special reference to phytoplankton (algal) component river Gomti in Jaunpur City. The phytoplankton (algal) community of river was represented by four algal group viz., Cyanophyceae, Chlorophyceae, Euglenophyceae and Bacillariophyceae. Out of 44 algal species, 16 species of Cyanophyceae and Chlorophyceae, 1 species of Euglenophyceae and 11 species of Bacillariophyceae were recorded from different sites of the river. Phytoplankton population showed a positive correlation with pH, DO, alkalinity, phosphate and nitrate and negative correlation with temperature and chloride. Many of the algal species, of the total 44 reported from the river like *Aulosira*, *Microcystis*, *Oscillatoria*, *Chlamydomonas*, *Chlorella*, *Pediastrum*, *Euglena*, *Cydotella*, *Nevicula*, *Nitzschia* were recognised as pollution indicators. The main source of the river were discharges of municipal and industrial water, human excreta agricultural run off and burning of corpse.

Key words :

Pollution,
Phytoplankton,
Diversity

The river ecosystem receives water from their water sheds, marginal run off and domestic sources. These water contain excess of organic matter, nitrogen, phosphorus, suspended particles and toxicants. They also get lot of other wastes in the form of garbage, effluents and sewage which affect the water quality and biotic community of aquatic body. Phytoplanktons are ecologically an important group of aquatic ecosystem because they play a key role as a primary producers.

Riverine ecosystems have been used extensively for different purposes and exploited recklessly throughout the world. Now-a-days, however, the riverine ecosystem are in a critical stage of ecological transition as evidenced from thick to very thick stand of macrophytes, indicating advanced stages of eutrophication.

Diversity indicates the degree of complexity of community structure. It is the function of number of species and abundance diversity has often been related to environmental characteristics of water mass and energy within the community. The biodiversity and production functions in riparian riverine ecosystems are reeling under serious threat and needs proper evaluation, though some reports are available for different riverine system (Michael and Sharma, 1988; Jha and Chandra, 1997; Lande, 2004; Nath and Ray, 2006).

The present study has been undertaken on the River Gomti which is considered as one of the most important tributaries of the Rive Ganga in eastern U.P. The present study has been

carried out for the assessment of phytoplankton (algal) diversity and the specimens were collected from four sampling stations of the River Gomti at Jaunpur, U.P.

MATERIALS AND METHODS

Study area :

Jaunpur representing south eastern part of U.P. and lies 82.6°E longitude and 25.7°N latitude embracing an area of nearly 4038 Km². Municipal and industrial sewages from different areas of city and industries are discharged into river directly or indirectly. Four experimental sites, viz., Kalichabad ghat (S₁), Hanuman ghat (S₂), Achala Devighat (S₃) and Ram ghat (S₄), were selected for study of algal (phytoplankton) diversity. S₁ site was considered as control assuming lesser pollution, S₂ and S₃ were the mixing zone and S₄ was selected as down stream of the river.

Phytoplankton study:

Plankton samples were collected by using plankton net made up of bolting silled no 25 (mesh size 0.064 mm) from 0-6 meter water column. Specimens were pressured immediately in 5% Formaline solution and identified with the help of relevant monographs (Desikachary, 1959 Frittsch, 1935; Prescott, 1980). Algae were counted by usual method. Algal biomass was estimated by 'Short term harvested method' (Odum, 1960) in second week of each month.

Accepted :
April, 2009