

BIODIVERSITY AND ENVIRONMENTAL CONSERVATION

Krishna Upadhaya



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SUPRIYA

Emerging Environmental Issues in Today's Society with Special Reference to North East India

Edited by
Dilip Sarkar
Nandini Gupta

Emerging Environmental Issues in Today's Society
With Special Reference to North East India

Dilip Sarkar
Nandini Gupta

North East India is one of the most diverse regions of South Asia. It is globally acknowledged for its rich eco-cultural practices enriched with varied traditional knowledge related to biodiversity conservation and sustainable natural resource management. The chapters of this edited book represent a valuable contribution in the field of environmental studies. This book reflects the nature of the environmental issues and tries to navigate the complex relationship of environment with society and attempts to comprehend the issues and concerns that are being faced by North East India. In all this book consists of 38 research articles contributed by scholars of repute.

Dilip Sarkar has been teaching English in various colleges and has completed his M.A. at undergraduate and post graduate level in Tripura since 1985. Presently he is the Principal of Bir Bikram Memorial College, Agartala, Tripura. He was awarded PhD for his research work "Culture and Language: A Critical Study of the Plays of Arnold Wesker". He has participated in many national and international seminars and conferences. Again his innovative thoughts are exposed in his published articles published in reputed journals. Dr Sarkar is a keen reader and commentator on the socioeconomic, educational and political scenario of India, especially of Tripura.

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3

Plankton Diversity of Wet Rice Fields as Indicator of Water Quality for Concurrent Rice-Fish Cultivation: A Case Study from Karimganj, Assam

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[ABSTRACT: A study was conducted in the wetland rice fields of Karimganj district in Assam to investigate its water quality and the various planktonic and periphytic communities. Water quality parameters such as temperature, pH, dissolved oxygen, biological oxygen demand, free CO₂, alkalinity and nutrients like nitrate-N and phosphate-P were analyzed. Besides, qualitative and quantitative analysis of phytoplankton, zooplankton and periphyton communities of the wetland rice fields were also done. It was observed that some of the important water properties of the wet rice field like, water depth ranged from 2.7 to 9.87cm, water temperature fluctuated from 22.33 to 37°C, dissolved oxygen ranged from 2.09 to 12.16 mg l⁻¹, free CO₂ varied from 2.66 to 5.99 mg l⁻¹, pH fluctuated from 4.05 to 6.04. The study also revealed the presence of 25 genera of phytoplankton and 30 genera of periphyton belonging to 4 major classes viz., Bacillariophyceae, Chlorophyceae, Cyanophyceae, and Euglenophyceae;

8 genera of zooplankton belonging to 3 major groups viz., Cladocera, Copepoda and Rotifera.

The present study shows that the wetland rice fields are rich depository of natural food resources for fishes. The study also highlights the scope for utilization of the planktonic and periphytic communities in wet rice field by introducing the concurrent practice of rice and fish culture.

KEYWORDS: Water properties, wetland rice field, phytoplankton, zooplankton, periphyton.

INTRODUCTION

Rice fields are dynamic, temporary and transitional ecosystems that have been managed by man in collaboration with nature since time immemorial and wet rice-fields are the most extensive freshwater aquatic ecosystem on earth with more than 1.5 million km² as shown by Fernandez *et al.* (2004). Wet rice environment provides the richest habitat of aquatic organisms as shown by Fernando (1993).

Karimganj district located in the south-western part of southern Assam is the only district that constitutes almost 30% water covered area especially in its wetlands. The water is retained in the wetlands for more than 6 month in a year. Here, 70% of total rural populations are directly involved in agriculture and on an average 15% of total rural population are in fishery sector.

In Karimganj, like other two districts of Barak Valley in South Assam, cultivation of wetland rice locally called as 'Borua rice' or 'Boro rice' is done in the low lying areas of wetlands (locally called as 'beels' and 'haors') where the soil remains saturated with water and nutrients throughout the year due to entry of nutrient rich runoff water from the surrounding upland areas. Subramanian *et al.* (2000), in their studies revealed that the flooded rice fields like any aquatic systems are rich in planktonic and periphytic