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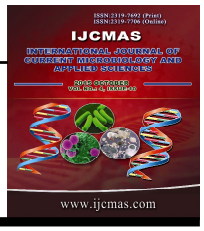

Original Research Article

Seasonal Variation in Physico-Chemical Parameters and Diversity in the Flora and Fauna of the Heroor Reservoir, Kalaburagi District, Karnataka, India

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A B S T R A C T

Keywords

Physico-Chemical parameters, Flora and Fauna, Heroor Reservoir

The present study deals with limno-chemistry of Heroor reservoir near Kalaburagi city, The parameters water depth, width and discharge, velocity of current, water temperature, pH, dissolved oxygen, total alkalinity, total hardness, plankton and fish community were studied. Dissolved oxygen and temperature were observed to be the major controlling factors in the distribution of Planktonic- flora and fauna. Distribution of fishes belonging to different families is also reported.

Introduction

Addition of industrial or urban waste to a lotic or lentic water body in enormous quantities alters to a great extent not only the physico-chemical environment but also its aquatic communities. Limno-chemistry and biotic characteristic of Indian Heroor reservoirs are extensively investigated by many researchers (Mitra, 1982; Singh *et al.*, 1982; Mahajan, 1988; Adwant, 1989; Pandey and Mishra, 1990; Pandey *et al.*, 1992; Srivastava and Singh, 1995.)

The lack of information on seasonal variations in chemical parameters and diversity in flora and fauna of Kagina Heroor reservoir has promoted us to carry the present study.

Material and Methods

Heroor reservoir is constructed on Bennithora Heroor reservoir 30 km away from Kalaburagi city. The present study was undertaken from August 2013 to July 2014. Collection of sample was made every month. The samples were taken from the sub surface layer (20-CM below the surface) across the Heroor reservoir. Water temperature was measured with the help of a thermometer calibrated up to 1. 0°C and transparency by the Secchi disc. The pH of the samples was measured with a portable pH meter. The Dissolved oxygen was determined by the modified Winkler's method. The other chemical parameters were determined by following standard methods (APHA, 1985 and Trivedy and Goel, 1984).

Results and Discussions

The monthly values of physico-chemical parameters are presented in table 1. The total monthly rainfall varies from 9.20 mm in April to 210 mm in August, where as no rainfall was recorded the months of March and December. The atmospheric temperature ranged between 25.0°C and 43.3°C (May 2013). The highest surface water temperature was 39.8°C in May and 21.0°C during August. Marked fluctuation has been observed in the monthly values of dissolved oxygen that ranged between 6.0 and 9. 9 mg/l. The low summer values of dissolved oxygen could be attributed to high water temperature and minimum flow of water. The water temperature and low dissolved oxygen during summer create favorable conditions for the development of blue-green algae.

Monthly mean values of free carbon dioxide are in traces for almost 7 months (November to May) and recorded high during August (6.6 mg/l). The pH of water fluctuated between 7.3 in August to 8.8 in December. The total alkalinity varied between 175.0 mg/l to 270.0 mg/l.

Phytoplankton

Four groups viz., Chlorophyceae, Cyanophyceae, Englenophyceae and Bacillariophyceae represent the phytoplankton. The Chlorophyceae is represented by *Spirogyra, Volvox, Oedogonium, Cladophora, Closteridium sp.* and *Scenedesmus sp*., the Cyanophyceae by *Anbena sp., Oscillaforia, Microcystis* and *Spirilina sp. Englenophyceae* by *Phacus sp*. and *Englena sp*. Bacillariophyceae by *Achnanthes sp.* and *Diatoma sp*. Majorities of these forms is in pools and puddles formed in the Heroor Reservoir during summer.

Zooplankton

There are no reports on the plankton fauna of Heroor Reservoir, Kagina. The zooplanktons are principally Rotifera, Copepada, Cladocera and Ostracoda. Rotifera are represented by *Brachinious angularis* (Gosse, 1891), *B. Caudatus* (Haur, 1937), *B. Calciflorus* (Pallus, 1766), *B. falcatus* (Zacharias, 1898), *B. rubens* (Ehrb, 1838) and *Keratalla tropica* (Apstein, 1907). Copepods by Cyplops sp., *Diaptomus sp., Mesocyclops sp.,* and *Paracyclops sp.,* Among *Cladocera, Bosminopsis sp., Ceridaphnia cornuata, daphnia sp., Macrothrix spinosa, Moina brachiata* and *M. affinis* are note worthy. *Cypris sp., Stenocypris sp.,* and *Heterocypris sp*. Represents Ostracoda. In zooplankton collection *nauplii* were encountered throughout the year.

Invertebrates

Among annelids, *Hirudinaria* and insecta group represented by *Chironomus javanus, Fanypus bilobatus, Notenerta sp, Dytiseus* and *Nepa*. The molluscans are: *Pila globosa, Lymnea sp., Vivipara bengalensis, V. variata, Lamellidens marginalis, Unio sp., Somatogyrus sp*. and *Carbicula ociidents.*

Composition of fish

The commercial catches shows 17 species of fishes *Notopterus notepteru, Mystus bleekeri, M. Cavasis* (Bagridae) *Wallago attu* (Siluridae) *Pseudotropius antheronoides, Clarias batrachus* (Clariidae) *Xenentondon sp*. (Belonidae) *Aplocheilus panchax* (Cyprinodontidae) are very rare. *Channa Punctatus, C. orientalis* (Channidae) *Rasbora daniconivs, Catla catla, Cirrhinus mrigala, Labeo rohita, Clarias batrachus, Glossogobius giuris* and *Puntius sarana* were found in large

numbers. Generally in summer *Marrels* and *Channa sp.* were predominant due to low water levels carps and catfishes dominated in winter seasons.

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