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Impact of Land Use and Aquatic Plants on the Water Quality of the Sub-Tropical Alpine Wetlands in India: A Case Study Using Neuro-Genetic Models

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ABSTRACT

The suspended and dissolved waste in the incoming storm water of wetlands largely depends on the adjacent land use which can influence the quality of the water body. The micro- and macro-floral population of a wetland can absorb, convert, transform and release different organic or inorganic elements, which can also change or impact the overall quality of the wetland water. The present study investigates the influence of the land use and the plant species in the waterbed on the water quality of a high-altitude, sub-tropical wetland in India. The estimation capabilities of neuro-genetic models were utilized to identify the inherent relationships between the Biochemical Oxygen Demand (BOD), Dissolved Oxygen (DO), chlorine (Cl) and Chemical Oxygen Demand (COD) with the land use and wetland zoology. A thematic map of the quality parameters was also generated based on the identified relationship to observe the influence that the morphological and biological diversity in and around the study area has on the quality parameters of the wetland. According to the results, the BOD, COD and Cl were found to vary with differences in land use and the presence of different plant species, whereas the DO was found to be largely invariant with changes in these parameters. The reasons may be contributed to the impact of uncontrolled eco-tourism activities around the wetland.

KEYWORDS

Wetland; Neural Network; Water Quality; Land Use; Aquatic Plants

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