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Hydrological characteristics and flood plain vegetation of human impacted wetlands: A case study from Okhla Bird Sanctuary, National Capital Region, India

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ABSTRACT

Yamuna River has been subjected to severe anthropogenic pressures such as water abstraction, discharge of wastewater, development activities on river floodplains, deforestation in the river basin resulting in reduced flow, loss of habitat, deterioration of water quality and loss of biological diversity. We studied hydrological characteristics such as river flow, water depth and quality and floodplain vegetation characteristics of Okhla Bird Sanctuary (OBS), a human modified floodplain wetland formed due to the construction of Okhla barrage across the Yamuna River in National Capital Region (NCR), on the Delhi-Uttar Pradesh border. The flow data for Yamuna was collected from Delhi Jal board and irrigation department of Uttar Pradesh. Study indicates reduced flow in the river downstream Wazirabad with no release of water in the summers of 2006 and 2010. For bathymetry, GARMIN 160 C Fish Finder was used after dividing study area into 50 m x 50 m grids. About 65% area had depth less than 2 m indicating more of shallower areas. Results for water quality analysis show a dissolved oxygen level at 1.6 ± 0.84 mgl^{-1}, Biological and Chemical Oxygen demand at 16.72 ± 4.28 mgl^{-1} and 39.8 ± 7.71 mgl^{-1} respectively, indicating a high organic load in the river. The Sanctuary is facing serious threats from the rapid proliferation of *Typha angustifolia* and *Eichhornia crassipes* which were dominant species in shallow water and open water habitats, respectively. Thus, the remaining Yamuna river flood plain in the NCR, Delhi should be declared as ecologically sensitive area and appropriate measures should be taken to maintain its integrity.

Key words : river flow, water depth, water quality, floodplain vegetation, Yamuna river, river restoration