

Ecohydrological perspectives of declining water sources and quality in traditional water bodies of Delhi

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Abstract This paper investigates the spatio-temporal changes in the traditional water bodies of Delhi along with the processes and forces behind the water quality change, and the ecohydrological consequences of the changing status of traditional water bodies. In 1970, the total number of water bodies was 807 with an area of 14.41 km², which declined by 21% to 640, having an area of 8.51 km² in 2008. About 108 (23%) dry water bodies have disappeared and this contributes to loss of 4.47 km², i.e. 60% of the area under the dry water bodies. The study shows that there is not only decline in the total number of water bodies but there is deterioration in the quality of water bodies. Among 27 wet water bodies, only 11 have clean water, the remaining 16 were filled with dirty water and filth due to inflow of wastewater from the nearby residential area and dumping of garbage around them. The land use in the catchment areas influences water quality through inflow of nutrients, organic and inorganic contaminants and siltation. The study reveals that extinction of traditional water bodies and dying tradition of construction and management of these water bodies has resulted in the serious decline in the level of groundwater in Delhi. The area of brackish water (EC > 2000 µs/cm) increased by 70% from 1977 to 2000. Birds like coots which prefer clean water have also started dwindling with the loss of habitat. The Indian purple moorhen has become uncommon in recent times and the number of frogs has declined in Delhi. The Delhi Government has prepared a Nine Point guideline for the revival of water bodies of Delhi.

Key words ecohydrology; water quality; traditional water bodies; biodiversity; Delhi, India