

Ecology of Lakes and its Conservation

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Abstract – A lake is the prettiest and most descriptive aspect of a landscape. It is also referred to as the "Earth's Core." Urban lakes form crucial habitats that sustain livelihoods with important social, economic and aesthetic benefits for quality life.

The oligotrophic, nutrient-poor lake is filled with nutrients and has a reduced microbial population; while the nutrient-rich, eutrophic lake has a thin sediment layer and may have an anoxic hypolimnion. Light exposure becomes reduced as microbial biomass increases with the nutrient levels. Therefore the lower sections will obtain poisonous gas such as H₂S emitted by anaerobes.

Keywords: Lake, Water, Ecology

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INTRODUCTION

Lakes (natural / manmade) also known as water bodies are water reservoirs; act as drinking water supply. Urban lakes play a key function in system homeostasis management. Most of the reservoirs, especially near urban or suburban areas, are found to be contaminated at various levels due to anthropogenic activities.

Some examples of such Indian lakes are: Bada Talab near Bhopal district, Hussain Sagar Lake in the heart of the city of Hyderabad, Dal Lake in Srinagar, all affected by organic contamination. Owing to depletion of lake water, the typical uses of the lake became disrupted. They are actually exposed to a great deal of environmental hardship and pressure in terms of emissions and ecocrisis.

Urban lakes are important in preserving the balance of surface and groundwater, in holding urban environments apart from their uses for various purposes, including tourism, water supply, fishing, etc. The paper explores developments at the intersection between complexities of the social and ecological environment, more precisely between urban lake systems and the processes of urbanisation.

Sewage and agricultural waste can increase the percentage in lake waters of nitrogen and phosphorus. This can in turn allow algae, bacteria, and plants to flourish in the epilimnion region. Cyanobacteria can induce algal bloom in oligotrophic fresh water. It has been noted that Cyanobacteria competes with algae where both Nitrogen and Phosphorus are present. Toxic flowers, as well as bacterial contaminants and

heavy metal waste, can seriously affect all water uses and pose an urban public health concern.

Thus, in recent years, a increasing public understanding of the condition of urban lakes has grown and special management programmes have been introduced nationwide in many metropolitan areas to improve sanitation, preserve leisure appeal and prevent health issues resulting from the degradation of their water quality.

The Lake Ecosystem

The section on Lake Ecology is intended to provide a general overview to Lake Access by providing the fundamental principles required to consider how the lake ecosystems operate. It is divided into three general parts, explaining the essential physical, chemical, and biological features of the lakes. Whereas the chapters listed in the index have a linear chain, each chapter stands alone.

"Ecology is the empirical study of the relationships that regulate the distribution and abundance of species," according to Krebs's (2011) definition. [03] Fecal pollution and toxic cyanobacteria blooms can deteriorate the ecological value of these ecosystems and turn them into a potential danger to human health which will entail expensive maintenance and recovery plans.

Many of our rivers, as well as our streams, wetlands and other bodies of water are heavily polluted. Objective- Contaminated water is a major health threat and it is important to clean up rivers, lakes and other water sources from water-borne biological

waste produced from pollution and sewage in order to turn waste into resources by raising more fish and thereby the fishermen's per capita income.

Contests:

Lakes, both natural and manmade, have undergone erosion worldwide due to urban, commercial, farming, and other impacts. For the past 50 years or so, considerable analysis has gone into approaches to the worldwide management and reverse lake depletion. Many approaches have been used, and technology have been created to recreate the lake. The conservation of lakes to enhance the level of H₂O involves measures that resolve both the reasons responsible for an increase in nutrient load and the nutrients stored.

Regulation of the nutrient intake into the lakes from the catchment

With the runoff of the waste or storm water chains the pollutants enter the reservoirs from point sources. Nutrient inputs from non-point sources can be reduced by, a) forestation or creation of sufficient plant cover in catchments, especially those vulnerable to erosion. (B) Vegetation buffer belts formed around the water sources. (C) Implementing farming methods that minimise the use and/or removal of fertilizers and pesticides from the fields.

In addition to numerous physical and chemical approaches, some biological methods for controlling / reversing eutrophication were also attempted with varying performance changes in different countries. The use of vegetation and built wetlands to extract nutrients and different contaminants from the waste water has already been stated earlier. The fish may help to lower plankton by feeding directly on the zooplankton that feeds on phytoplankton. Biomanipulation is more effective in reducing the nutrient loads.

Large organic matter content contributes to loss of oxygen and the production of poisonous compounds (H₂S, ammonia), resulting in foul smell and fish kills. Water column ventilation with the aid of a number of aerators and diffusers that often use minimal quantities of oxygen is commonly used to decrease the bacterial content of the water column. A mixture of different micro-organisms has been developed in recent years for targeting the organic matter through a mechanism called bioremediation. It is also encouraged in combination with the microbial formulations by the application of aeration.

Research relevance

Water, the elixir of creation, is the earth's most valuable fuel. Existence originated in space and formed until it arose on earth. Both on land or on sea, the unit of life is the living organism, the majority of which is sea itself. It is the delicate equilibrium of

chemicals within the cellular water that eventually decides the quality of life and creates a precarious boundary between life and death itself. No wonder, the ancient human cultures all over the world have regarded water as an ingredient and water bodies in general as sacred.

Modern times have seen, unfortunately enough, a dramatic shift in our attitude towards water and water bodies, the respect of it is becoming more a matter of ritualism. Water is consumed with gay waste and water sources are polluted for new purposes or have turned out to be filth and pollutant receptacles, including life-threatening contaminants and toxic pesticides. These toxins have turned out to be significant threats to the very nature of life on the earth, via the bio-magnification process.

CONCLUSION

The report suggests analysing all of the lakes for their chemical and physical properties. In addition all the lakes should be restored and protected from further deterioration. The rules that exist for the safety of the lakes must also be applied. The local authorities will need to work to clean up the existing lakes and allow nearby people to use and sustainably maintain the habitats.

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