Chapter 1

INTRODUCTION
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Water is the basic requirement of all life forms on the earth. It is medium of life because it is best solvent and unique in many physico-chemical ways, as we know that water is an essential constituent of cell and all life process reactions take place in presence of water. Food and nutrients move from cell to cell through water medium. Water is also the raw material in the manufacture of carbohydrates through photosynthesis in green plants. Animals also depend on the synthates prepared in the body of green plants. Two things immediately become clear, one: that water is very abundant and second: that it is the very basis of life i.e. elixir in the real sense. Because of its capacity to dissolve an extremely wide variety of substances it is both very useful in making solutes available to cellular organelles for biosynthetic activities and harmful in getting readily polluted by dissolving in harmful proportions many substances toxic to organisms and man.

Water like air, has been one of the major environment components. It is an indispensable and the most precious natural resources on this planet, as prime necessity of life. Natural water bodies are most important natural resource on earth, and they are of paramount importance for mankind and animals. Standing fresh water bodies include lakes, ponds and tanks. Lakes and tanks are a mass of still water, situated in a depression of earth without direct communication with sea (Seulthrope, 1971).
India is very rich in water resources and stand second in the world. Its inland water resources occupies an area of about 1.37 million hectare. The inland water resources are scattered in the form of river, lakes, ponds, stream and other fresh water bodies in which water bodies and large flowing water resources occupy about 0.72 million hectares of water area.

The changing scenario of country’s water reserves are posing serious economical as well as environmental concerns. It will not be viable if they are not given their due attention, both on their conservation and management platforms. If we will continue to ignore and overlook the water reserves need, we can not minimise or stop their either degradation or death. Precisely, it is very much applicable to the ongoing onslaught of the fresh water bodies like dam. They have not remained as such and loosing their points of attractions either for the locals, tourist populace and migratory birds. This situation is automatically expressing the health of the dam in reference. Although, the Chittaurgarh dam is a fresh water dam, even then, there is no indication that the villagers are using its water as potable water. Reduction in water levels to an all time low has resulted in for bidding the visits of migratory birds and also other visiting birds and animals. The natural health of the dam has been very much alarming for the survival of the indigenous species of the aquatic plants and fishes for the last few years. Due to the environmental problem, the dam as wetland is no choking of sewage like pollutants in this dam even then, the degradation of the dam already has been started and if it is not given its due demands it will certainly lead towards its final death. These are
the few points which have attracted our attention to investigate its different aspects of the ecology, phytodiversity as well as eutrophic gradient under the present project.

Population explosion, advancement in technology and expansion of human activities have created widespread and severe anthropogenic to fresh water bodies. Fast deterioration of water quality is a major problem not only in India but all over the world. In the Indian subcontinent there are several natural and artificial ponds, reservoirs and lakes (Rao, 1975). In India rural and urban areas present two contrast situations. In rural areas, a water body is normally used for all kinds of human requirements, such as bathing, washing, swimming, waste disposal, irrigation and even for drinking water too. An undesirable consequence of eutrophication is the development of cyanobacteria that tend to form dense surface blooms, excreting organic compounds that impart bad odour and taste, creating serious problems in drinking waters (Ramachandra and Ahalya, 2001).

The wetlands specially, the lakes and dams, in comparison to other types of ecosystems has been given lesser importance in term of working out their conservation and management needs along with the available biological diversities. Therefore, it was urgently felt that the areas should be explored both academically and economically so that they can contribute enormously in the best development of the area in which they are situated. The dam are important units of aquatic ecosystem in particular and lotic habitat in general. All the fresh water ecosystems are very much dynamic ecosystem. A complete understanding of the ecosystem needs a
sound knowledge of organisms inhabiting the lake and the factors either artificial or natural interacting with them. Wetlands includes lake which can be defined as the area of land covered with shallow water or have water at or near the surface for all parts of the years. Generally, the wetlands have wet soils that are low in oxygen and plants that are adopted to flooding and the lack of oxygen around their roots. Actually, the wetlands are the transitional areas between aquatic and terrestrial ecosystems where the water table is usually at or near the surface of the land which is covered by shallow water. The wetland category includes marshes, swamps, food plains, bogs, peat lands, shallow ponds, littoral zones of larger water bodies like lakes and tidal marshes.

Wetlands like lake, dam etc. are of utmost importance for several reasons. They repressnt only a part of our land bases but they provide shelter to a great number of animal and plant species. Many species only use the wetland for a very small but important part of their life cycle such as for breeding and reproducing. The wetlands can change the water flow by absorbing much of the surface water runoff from the land, and then by slowly releasing it. In this way the wetland helf to reduce the flooding and also to sustain water flow during dry spells. On the other hand, wetlands also play an important role in maintaining the water quality by trapping sediments and absorbing excess nutrients and heavy metals.

The wetlands that connected to uplands terrestrial, forested sites add more value to the landscape. For this purpose, buffer around wetlands should extend into it and include nearby habitats or upstream terrestrial
environment. Wetlands discharge water to watershed and recharge by underground acquires. One wetland may depend on ground water or discharge water flowing from another wetland. Thus, the loss of each wetland may have unanticipated impacts else where in the watershed. Likely, we can not anticipate or expect our backyard wetland to replace this intricate relationship nor that a wetland constructed to replace the drained site which will have the same hydrological or wildlife activities.

India is having 2,167 natural and 65,254 man made wetlands occupying 14,50,871 hectares and 2,58,266 hectares of land respectively. Moreover the association of man and wetlands is prehistoric. India also represent a rich variety of inland and coastal wetland habitat. In addition the lofty Himalaya also accommodates several well known lakes. There are a number of lagoons, estuaries and mangrove swamps all along the chains of islands of Lakshdeep, Andaman and Nicobar in form of total 7,500 Kms of coastal stretch. Where as during dry seasons, the wetlands serve a main source of water utilized in sustaining the living communities in their periphery, plus providing water for domestic consumption, irrigation and industrial usage. Unfortunately, at present, the Indian wetlands are facing severe threat and are being continuously degraded due to anthropogenic, pressure, human settlements, urbanisation and industrial developments. In turn, the ongoing scenario is seriously affecting the wildlife biota plus other biological diversities. Finally, the degrading wetlands will loose their natural characteristics and productivity potential.
According to the Asian list of wetland area, there are about 93 important wetlands in India. The national committee has recognized 16 very important wetlands. The total area of Indian wetlands is about 41 lakhs hectares excluding the area of Kutch wetland which is having a catchment area of about grow 6740 Kms. The wetland development is controlled by several factor such as climate etc. The wetland do not vertically but expand laterally over surrounding areas.

In our country Bhakra dam and canal, Ganga canal, Nirmada dam, Hirakund dam, Indira Gandhi Nahar Pariyojno (IGNP), Rihand dam Pariyojna, Saryu canal Pariyojna are the best exemple of water shade management programme. Unfortunately, at present, these man made Indian wetlands are facing the problems of urbanisation and Industrial developments. The existing possibilities of integrated agriculture of fish fauna and aquatic cash crop are to be exploited properly in such type of manmade wetlands therefore they lead the problem of eutrophication due to increasing nutrient status of water bodies. Human activities and their unscientific approaches are mainly responsible for rapid degradation and eutrophication of natural and artificial man-made wetlands.

Chittaurgarh dam is one of the most important famous dam in this series at district-Balrampur. It is a composit group of different type of lotic and lentic water bodies. Its situation is important because it is situated at Indo-Nepal border. Now this dam becomes a problem for resident of adjoining areas of India and Nepal because unscientific use, and collection of water and in geographical significance. Chittaurgarh dam is also
regarded as famous picnic spot of district-Balrampur. Therefore different types of pollution created by tourist. (Chittaurgarh dam is at present a centre of phytopollution with disturbed eutrophic gradient and nutrient dynamics and thus it influences phytosociology of adjoining areas). Like Tehri dam which is responsible to finish the history of Tehri Garhwal city of Garhwal region of Uttarakhal, Chittaurgarh dam’s situation is also required to study. Therefore we should take the remedial steps to solve the problems raised earlier regarding Chittaurgarh dam. Present investigation is focusing on the problems related with dam and its suitable solution.

The perusal of vast number of literature pertaining to the ecology, including various environmental parameters fluctuations, protection, conservation and management of the biological diversity including land degradation suggests that the proposed project is of high importance and has potentials for the socio-economic development of the region concerned. The results of the proposed study will be communicated to the responsible authorities and government organizations in the interest and development of the productivity of chittaurgarh dam as well as the area in the form of famous ecotourist spot and biological reserves.

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