CHAPTER I

GENERAL INTRODUCTION
CHAPTER I

GENERAL INTRODUCTION

Since early man first used rivers as a source of water and food and, for navigation he must have been aware of the existence of different types of rivers and reaches and their associated plants and animals. Rivers are precariously balanced systems existing in close proximity to man and over the years have been particularly vulnerable to his uses and abuses.

Our streams range from small crystal clear nearly ion free water that can maintain remarkable uniformity in both flow and composition to larger water courses that experience violent fluctuations in chemical characteristics, biotic composition and discharge.

India has an extensive riverine system with fourteen major systems. They share between them 83% of the drainage area. Eighty five percent of the surface water flow of the country is from fourteen major rivers and eighty percent of the total population is located on the banks of rivers. In addition, there are forty four intermediate and fifty five minor rivers which are rapid flowing, monsoon fed and originate generally in the mountains of the coastal region.

There are naturally a wide variety of uses to which a river can be put, and accordingly they are categorised as:
a) The group requiring highest quality - includes the use of water as raw water for water supply, salmon and trout fishing, swimming and certain industrial purposes.

b) The second group includes uses such as general freshwater, fishery, boating, picnicking and others.

However, there is need for a third group which will include water required for cooling purposes and navigation.

India is a developing country and to attain a higher order of development, has not only established a good industrial infrastructure in core industries but also implemented several schemes to bring green and white revolution. As a consequence the water requirement for such developmental projects is increasing continuously (Chaudhury, 1982).

Estimated quantum of available water is 1900 Mm$^3$/Y in 2000 AD. For irrigation and live stock water uptake would be 869 Mm$^3$/Y, of which water consumed would be 783 Mm$^3$/Y and nearly 86 Mm$^3$/Y is returned as waste water. For power generation, water required is 150 Mm$^3$/Y of which consumption would be 5 Mm$^3$/Y and 145 Mm$^3$/Y is returned as waste water. For domestic purposes, uptake would be 38 Mm$^3$/Y of which 8 Mm$^3$/Y would be consumed and 30 Mm$^3$/Y would be discharged as waste water.
The waste water so generated would pollute our freshwater ecosystems. An important point to be remembered here is that there is an urgent need for conservation of water in all the user sectors as the country is likely to use 1092 Mm$^3$/Y out of 1900 Mm$^3$/Y in 2000 AD.

Cauvery is the river par excellence which has contributed in no smaller measure to the well being and prosperity of a larger section of our country. Water of no other river in India has been so completely and effectively used for the benefit of mankind as the waters of river Cauvery (Radhakrishna, 1992).

A comprehensive study of a small stretch of river Cauvery has been carried out (Somashekara et al. 1980, 1982 a,b, 1984 a,b, 1985 a,b, 1988, Paramasivam, 1981, 1983). Subsequently more industries have come up on the banks of Cauvery and its tributaries and they are discharging treated and untreated effluents into it.

In recent years, more elaborative studies on river Cauvery was possible with the assistance of the Department of Environment and Forest, Government of India. The present work was undertaken because of the non-availability of information on the sediment and biotic composition of the entire stretch of river Cauvery from Karnataka. The data presented here in six chapters embodies the information on water chemistry, nutrient status of sediment, macrophytic vegetation, composition of zooplankton and macro-zoobenthos, etc.