In every nation scientists and conservationists are now worried increasingly about the environmental hazards that headlong development may bring. The prices of development have included pollution problem, loss of farmland and habitats (for people as well as wild-life), and even the spread of diseases. Some environmental disruption is unavoidable concomitant of development, but the ecologists and environmentalists insist harmful effects which can often be anticipated and minimized it development is preceded by ecological studies and careful planning. Though the developing nations intend on developing goals and though the developed countries continue to encourage them in this, things are appearing that the commitment to change may become tempered with caution.

The environment consist of the atmosphere, hydrosphere and lithosphere. When parts of the environment change its chemical composition changes as a result of human activities, without any obvious biological consequences. From the global point of view; it would be a great interest to compare the amounts of element added to the water Cycle by man’s activities with the amounts which are cycled naturally. It is of primary importance that water would be available to living organism in sufficient quantity, but scarcely of less significant is the quality of water. In this connection, the pollution of many rivers looms as a problem of the first magnitude and represents wasteful misuse of water and discharge of substances produced by human population in water.

The high rate of increase in human population in India and rapid pace of its industrialization have created problems of disposal of waste products. Maintenance of harbors, industrial plants, agriculture, food developing plants, villages, town and cities discharging their domestic wastes into the water bodies. The human activities increases progressively all over the world; they exert an over growing influence on near shore and banks of these water bodies and the organisms contained therein. All the polluting components (oil products, chemical wastes, domestic sewage,
radioactive substances and heated effluents form cooling systems of industrial installations and power stations) tend to enrich the water with foreign organic and inorganic components, thus, influencing, as a special investigations have shown the endemic bottom invertebrate fauna modifying its composition, pattern of distribution, biological cycles and the activities of individual species (Manivaskam, 1987).

Experts estimated that industrial and domestic waste water introduces up to a million different pollutions into natural waters. Substances such as polycyclic, aromatic, pesticides, radioactive material and many trace elements directly enter the human life. The latter groups of pollutants are noted in two respects firstly, many trace elements are not usually eliminated from aquatic ecosystem by natural processes, in contrast to the most organic pollutants and secondly most elemental pollutants are enriched in mineral and organic substances. Amongst these elements, toxic metals such as mercury, cadmium, arsenic, copper and many other species like fluorides tend to be accumulated in bottom sediments. They may be released by various processes of remobilizations and move up the biological chain thereby reaching human beings where they produce chronic and acute toxicity.

The earlier studies on water pollution were motivated primarily by public considerations. The physical, chemical, microbiological and biological changes that occur in unpolluted streams and streams polluted by domestic waste are adequately, not completely understood. Various aspects of these changes have been studied with the exception of the biological changes. The principle area concern today is the need for understanding the biological effects of the various industrial wastes and hazardous chemicals on the biological resources of receiving water. Many industrial wastes prove to be complicated mixtures of metals, organic substances, greases and oils derived for the lubricants used for plant machinery and any other materials most easily disposed of through a floor drain, will be discharged into water ways containing substantial amounts of
toxicants or oxygen reducing substances derived from other industrial or municipal waste sources.

An animal does not exist apart from its environment, exception of some habitats such as oceanic depth and the interior of a warm blooded animal where parasites reside in relatively constant conditions. Most animals face nutritional uncertainties, marked diurnal and seasonal oscillations, which altered rates of metabolism and activities (Ugale, 2003). Successful living demands continued physiological adjustments in relation to environmental variables. Precisely timed physiological process must prepare the animals for diverse activities like growth, reproduction, aestivation and migration etc.

Environmental pollution and human efforts for the betterment of living standards are the two sides of the same coin. In the wake of the industrialization consequence, urbanization and ever-increasing population, the basic amenities of life, viz, air, water and land are being polluted continuously. Industrial complexes have become focused on environmental pollution. Public interest in ecology implied a concern for air and water quality, for the increasing demand on limited natural resources in the context of increasing population. Today water resources have been the most exploited natural system since man strode the earth (Dara, 2002). Time is perhaps not too far when pure and clean water, particularly in densely populated, industrialized water scare areas may be inadequate for maintaining the normal living standards. Ground water, rivers, dams, seas, lakes, ponds and streams are finding more difficult to escape from pollution. Many rivers of the world received heavy flux of sewage, industrial effluents, domestic and agricultural wastes, which consist of substances varying from simple nutrients to highly toxic hazardous chemicals.

Hydrogen, oxygen, carbon, nitrogen, calcium and phosphorous are the elements present in greater quantity in both soil and water. They are required in larger concentrations than the other elements
and most studies of the problem have focused on carbon, nitrogen and phosphorus. Hydrogen and oxygen are present in almost limitless supply, the hydrogen coming from water and the oxygen from the air. Although nitrogen is abundant in air, not readily available to living organism because of the nitrogen triple bond energy. Calcium is generally available via soluble components. An organism required the supply of nitrogen in a special form i.e. easily metabolized. Thus, the presence of certain numbers of moles of nitrogen atoms might not be a sufficient condition for the organisms continued existence. Phosphates and sulphates occur in the bottom sediments and in biological sludge, both in precipitation in organic forms and incorporated in to organic compounds where as carbonates, bicarbonates and chlorides are dissolved in water. In an aquatic ecosystem, physico-chemical environment has profound influence on its biotic components. It controls diversity, biomass and spatial distribution of biotic communities in time and space. The physical and chemical parameters exert influence both individually, collectively and their interaction produced abiotic environment which ultimately conditions the origin, development and finally succession of biotic communities. Further, biotic communities intern, continuously alter abiotic components goes in a dynamic ecosystem (Tyagi and Mera, 1990).

With rapidly advancing technology mans impact upon the world of living things is beginning in the environment, some of these are toxic and non toxic. Man is a basic pollutant responsible for the pollution hazards and toxic effects. The toxic chemicals are discharged by industries into air, soil and water get into human and animal food chain from the environment. Once, they enter into the biochemical process, they produce serious effects on living conditions. Man has brought great changes in the natural environment both intentionally and accidentally, with disastrous consequences. Geochemical and biological process is also involved in metal pollution together with human activities in the field of
technology, which resulted in contamination of various water bodies. The problem of water pollution by heavy metal is well known to be of crucial importance all over the world and especially in developing countries like India (Patil, 1993).

After the time of industrial and green revolution, the wide spread use of heavy metals is increased in industries and agricultural fields. The discharge of untreated effluents from industries and agricultural wastes which entered in environment disturbs the biological balance. Two groups of substances have lasting effect on the natural balance in aquatic system “Nutrient” which promote unrestricted biological growth and in turn oxygen depletion and sparingly degradable synthetic chemical growth and in turn oxygen depletion and sparingly degradable synthetic chemicals and other wastes which often constitute adverse effect on aquatic ecosystem. Environmental experts estimated that industrial and domestic wastewater up to a million different pollutants into natural water. Substances such poly-cyclic aromatics, pesticides, radioactive substances and trace metals directly endanger the human life.

Natural water is extremely varied in chemical composition and factors controlling the composition include physical, chemical and biological processes. Dams are the most important water resource. Unfortunately, the dam is being polluted by indiscriminate disposal of sewage, industrial wastes and human activities through rivers. The rivers are always victims of impact of urbanization. Most water bodies become contaminated due to incorporation of untreated solid and liquid waste. Generation of hazardous waste has become an integral part of different activities of modern man. Large quantities of sewage and industrial waste find its way to river and dam water bodies. Large towns in India are situated on the river banks, their runoff and those form agricultural and lands find their way to the river making the water unfit for human use (Manivasakam, 1987).

Physico-chemical characters becomes essential part of study and also generates baseline data regarding the extent of pollution
and sources for the same. Studies on the physico-chemical characterization of single industries have been reported by various researches and the related impacts on the surrounding areas have been investigated in our country (Trivedy, 1988). Various researchers studied physico-chemical characters of drinking water (Raju, 2001). Extensive research has been carried out on the characteristic of rivers and dams at various stretches in India and abroad. Some of the major rivers investigated in India include Ganga, Yamuna and Godavari which are polluted mainly due to the domestic wastewater discharge. On other hand, the main sources of pollution of the river Godavari are uncontrolled and partially treated industrial effluents containing toxic metals (Pondhe and Jadhav, 2002).

In the international field numbers of efforts are being made to advance studies on zooplanktons by employing zooplankton analysis using systems identification techniques. Martin et. al., (1996) applied acoustic classification for the same purpose. A number of workers have studied the importance of nutrient enrichment on the zooplankton community like Zinevivi (1993), Mazumdar (1994) and May (1995). Zooplankton diversity, population density and spatial distribution are highly influenced by two factors, feeding ecology and biotic interaction. Fradkin (1995) discussed the body size of cladocerans and its relation to rotifer community structure. Pace et. al., (1997) studied trophic cascade and compensation with reference to micro zooplankton in Washington. Vernar et. al., (1975) studied the impact of lake or dam restoration on the zooplankton community in Bancila Lake, U.S.A. Similarly, studies on biomanipulation were conducted by Francis (1997), Harig and Mark (1998). Kortman, et. al., (1994) employed zooplankton characters in lake monitoring in Russia. The community structure and population dynamics of zooplankton is significantly influenced by phytoplankton biomass (Atkinson et. al., 1996; Gilbert, 1996; Arner, 1998). Echevania and Begona, (1994) has reported influence of phytoplankton composition and stratification on gut pigment content of Cerodaphnia. A number
of studies across the world have been carried out on migratory patterns and seasonal distributions of zooplanktons (Loose, 1994; Martin and Lind 1996; Beaver, et. al., 1996; Atkinson and Angus, 1996; Arts, et. al., 1997; Arner and Marie, 1998). A number of studies have been conducted to illustrate the role of phosphorus, nitrogen, and salinity on zooplankton communities. (Wen, 1994; Robert and Gayle, 1995; Aoki, et. al., 1995; Gaulati and Ramesh, 1995; Ejsmon- Karabin, et. al., 1996).

The present study was undertaken on the water quality of Jaikwadi dam and the survey of the dam with reference to present status, topography of areas, degradation areas, altered areas, identification of water flow, identification of human intervention, industrial wastewater and residence of human population, socioeconomic status of the villages along the dam, seasonal primary productivity, seasonal physico-chemical and biological characteristics of water quality, diversity of fauna including macro invertebrates and avifauna, determination of enrichment of heavy metals, identification of areas threatened and endangered species.

The introduction of metal contaminants into the aquatic system has various sources including smelting process and fuel combustion via atmospheric fallout, pollution form leaks, effluents and dumping activities from runoff of terrestrial ecosystem where accumulation has occurred by atmospheric input, land application of sewage materials and leaching of garbage, on the otherhand polluted water bodies lead over many pathways to metal contamination of terrestrial ecosystem, for example, by way of irrigation, dredging activities, biota flux etc.(Chen et. al., 2001).

The study was carried out to determine the effect of heavy metals on the distribution of inhabiting bottom fauna. The major sources of heavy metal inflows are industrial, agriculture runoff and domestic releases. The water, sediment & benthic macro fauna were collected from different stations. The work has been carried out to determine the enrichment of metals like Zn, Cr, Cd, Pb and Hg in
water. Heavy metals are well known pollutants, which are often encountered in many rivers, dams and lakes of India and there is possibility to fish, the most important aquatic fauna being subjected to stress caused by these heavy metals (Smit et al., 1987).

Autotrophic organism by their photosynthetic or chemosynthetic activity stores some organic matter. The rate at which this organic matter is stored or accumulated in the ecosystem is referring to as primary productivity of the ecosystem. Different ecosystem has different primary production depending upon their physiochemical and abiotic environment (Arvind Kumar, 1996).

Most of the Indian rivers, dams and fresh water streams are seriously polluted by industrial waste or effluents which comes along with waste waters of different industries (such as petrochemicals, fertilizers factories, oil refineries and mills include metals such as copper, zinc, lead and mercury etc.), detergents, petrochemicals, acid etc. All these industrial wastes are toxic to animals and may cause death or sub-lethal pathology of the respiratory system in both invertebrates and vertebrate. The toxic substances present in the industrial wastes not only disturb the ecological balance in the receiving water but also endanger the health of animal (ICMR, 1975).

Zooplankton plays a major role in converting phytoplankton into food suitable for fish and aquatic mammal. They have acquired importance in fisheries research. They are important in fresh water ecosystem as they indirectly convert the energy due to their role as preys of economically important fish. By their heterotrophic activity, zooplankton organism initially handle and manage biogenic organic materials, primary and secondary production to considerable extent (Surve et al., 2004).

Zooplankton in water belongs to four main taxonomic groups (Rotifers, Cladocera, Cyclopoda and Calonoid Copepoda). These are abundant in shallow areas of reservoirs, ditches, stagnant water ponds, but only few species are abundant in open water. They occupy an intermediate position in food webs. They migrate several
meters each day towards the surface at night and towards the bottom at daylight. It has been suggested that by coming up to feed at night the zooplankton.

In India, much of the research work has been done in the fields of agriculture, horticulture and traditional forestry with regard to insect pests and their control. The vital importance of birds as bio-control agents of insects and rodents pests has been long established. However birds are more efficient as insect controllers due to their higher rate of metabolism (Tara Gandhi, 1995).

Birds have play a unique role in the growth, protection and restoration of natural environmental and thus there important significance in the maintenance of clean and healthy environment is of high odor and it is great important to man (Patil et al., 2005). Studies of bird migration and distribution during the several decades have emphasized questions related to the mechanism and development (proximal causation) of migration, whereas questions related to the evaluation and function (ultimate caution) of migration and distribution have received considerably less attention from ornithologists (Eswari Yalavarthi, 2002). The Proximal causation bias has failed to emphasize the diversity of avian migration systems that have evolved as results of temporal and spatial changes in the environment (Venkateshwarlu and Mallikarjun, 2002).

The study was focused in the taxonomic composition and abundance of the macro vertebrate’s community, seasonal abundance to the macro vertebrate community and baseline water quality data, based on macro vertebrates and several physicochemical measurements to better understand and manage the water body of the Jaikwadi dam.

The data collections on the above study are presented in different heads Introduction, Material and methods, Results and discussion, General summary & conclusion and References.