CHAPTER I

GENERAL INTRODUCTION
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Balancing the ecology, environment and economics through human centred development can resolve the crisis of unbelievable dimensions created by unsustainable lifestyles on the part of few and unacceptable poverty on the part of many. Researches in biological diversity span through the times of evolution, biology, population and community ecology as well as cover a continuum of perspective of biodiversity from its genesis to its maintenance. Taxonomic diversity is critical because taxa are the units that contain genetic diversity. Some species play a more significant role in the ecosystems than others as indicators of ecological processes or as keystone species influencing community structure (Wilson, 1992) which are essential for ecosystem stability and diversity. Often equal important are the taxonomical and functional aspects of community structure
incorporated in food web which provide information on energy flow. One among the important communities playing a keyrole in the food web are Rotifers or Rotatoria.

Rotifers exist in endless variety in all the aquatic environments, especially in the eutrophicated ponds and lakes and have a significant role in the flow of matter and energy through food chain (Pilarska, 1977 a,b,c). Therefore they have been used as model organism for food chain studies (Borass, 1983; Rothaupt, 1982). They are good indicators of saprobity; occur in purification plants where the wastewaters are treated biologically. Rotifers were first used as indicators by Kolkwitz and Marsson (1902, 1909). Rotifers of activated sludge were first studied in detail by Godeanu (1966) in Rumania, Kilmowicz (1970, 1972, 1977) in Poland, Doohan (1975) in Great Britain and Sudzuki (1981) in Japan. An abundant rotifer fauna is often present in different types of stabilization ponds and in polluted water of standing water bodies with a inlet of liquid manure. On the other hand, rotifer cultures are used as a tertiary treatment stage of wastewater treatment in high rate algal ponds (Groenweg and Schluter, 1981; Mitchel, 1986) where the hitherto expensive separation of microbial biomass from the pond effluent may be achieved by the filtering activity of the rotifers thus yielding a valuable byproduct 'rotifer biomass'.
As far as the economy is concerned, the world population increases tremendously day by day which doubles the food requirement whereas the resources are limited. It's estimated that about 10 million people die every year in the world either by starvation or by malnutrition. Scientific developments and advanced technologies try to solve this problem by providing food, the basic need for survival. In a world where human population is increasing at a rate of about 75 millions each year and where half the people are undernourished the opportunity to improve the productivity of the sources of animal protein cannot be neglected. The need for mobilizing and increasing all possible protein food sources is particularly great. A large segment of our population is underfed and malnutrition is rampant. Aquaculture is one of the most rapidly growing areas in the field of food production. Fish is widely recognized as an excellent source of high quality protein at cheaper cost. The present per capita consumption of fish is only 3.5 kg/year in India as against the desired consumption level of 31 kg/year as recorded by the National Advisory Commitee on Human nutrition. In a vast country like India where human population is increasing at an alarming rate of 15.2 million augmentation of fish production through environmental and genetic manipulation is imperative to cope up with the problems of malnutrition. Achieving nutritional security in terms of valuable protein for the growing population of Indian sub-continent is a major challenge in the new millenium. A
project (UNO, 1996) forecasts that the total volume of fish required for human consumption will be 97.2 million in 2010 A.D. and 114.8 millions in 2020 A.D. So, there is an urgent need to make the best used of every possible protein source. Taking into account of aquaculture development in India, a remarkable increase of 7.88 lakh tonnes in 1887 to 1.77 million tonnes during 1996 (Ayyappan, 1999). 82% of the world annual fish production is achieved in Indo-Pacific region. Thus fish have tremendous potentials to meet the animal protein sources.

With regard to the economic importance of fish production, India earns more than 3000 crores as foreign exchange even from shrimps only. By undertaking available technologies of fishery sector, there is vast scope for earning considerable foreign exchange and promotes nations economy (Singh et al., 2000). It is well known that the seed, feed and water are the main prerequisites for successful aquacultural programmes (Jhingran, 1991). Among the three, nutrition plays a key role in determining the efficiency of fish production especially during the early larval stage. Aquaculture practices mainly require live feed organisms early from the hatching stage of fish and crustacean larvae. Rotifers are extensively used as the ultimate source of live food for their smaller size, behaviour and nutritional quality (Lubzens et al., 1984) Okauchi (1980) and Kafuku and Ikenoue (1985) have estimated that even a single hatchling needs
40,000 - 1,50,000 rotifers for its survival for 3 - 15 days. Thus aquaculture hatcheries face a great demand for these minute rotifers to succeed commercially in fishery production. Rotifers are seasonal in occurrence so there is a need to maintain a stock for further use as an inocula for mass production of rotifers in the hatcheries throughout the year. Resting dormant eggs of rotifers help in regard to this to maintain a stock in the off seasons particularly during winter. Taking into account of all these factors in fish production, the live feed organisms especially rotifers enhance the production of hatchlings which triggers the commercial fish production all through the year which inturn promote the countries economy. Hence, the commercial/economic production of fishery products purely depends on rotifers to attain their target just to go in hand with countries economy.

Compiling all these keyroles of Rotifers in the Ecology, Environment and Economy an attempt has been made to study the taxonomic diversity of "Freshwater Rotifers" of Palayamkottai locality where no attempt has been made so far and emphasizing their distribution, surface topography of resting eggs and natural stock maintenance.