**ABSTRACT**

Water not only acts as the source of life but also as a condition of possibility of life on Earth. Therefore, the words of Robert G. Wetzel have to be doubtlessly agreed upon; “Water is the essence of life on Earth and totally dominates the chemical composition of all organisms”. Water is nature’s most abundant, wonderful and useful chemical compound and is a precondition for human, animal and plant life as well as an indispensable resource for the economy. It has played a role not only in the history of countries, but in religion, mythology and art. Zooplankton are one of the most important biotic components influencing all the functional aspects and plays a vital role in food chain, nutrient recycling and energy flow in the aquatic ecosystem. Zooplankton acts as main sources of food for many fishes and plays an important role in early detection and monitoring the pollution of water and this community distribution depends on some of the complex factors viz, change of climatic conditions, physical and chemical parameters and vegetation cover. From the Literature survey, I found that there is a gap in the knowledge, especially in the species diversity of four groups of Zooplankton in Kukkarahalli Lake of Mysore, Karnataka State of India. Hence, the present investigation was taken up to fill up the gap in the knowledge of species diversity of four groups of zooplankton and to know this relationship, if any with 14 water - quality parameters.

The diversity studies carried out zooplankton from five sampling sites (S - I – to S -V) on Kukkarahally lake of Mysore. In all 39 species belonging to four different taxonomic groups viz. fifteen belonging to Rotifera, fourteen belonging to Cladocera, three belonging to Cyclopoida and seven belonging to Ostracoda were recorded during the I\textsuperscript{st} year (2010-2011) of study, where as 42 species of zooplankton groups viz. seventeen belonging to Rotifera, fifteen belonging to Cladocera, three belonging to Cyclopoida and seven belonging to Ostracoda were documented during the II\textsuperscript{nd} year (2011-2012) of study. The results of diversity of four groups of zooplankton studied for two years. The present study, Rotifers representing two orders (Pliomida, Flosculariacea) under the class Monogononta were collected from the study area. In the present study, 17 species of Rotifers belonging to 4 families and 5 genera were recorded. The number of Rotifera was found to be maximum in site - V during summer season and minimum were seen in site- I during monsoon season. *Brachionidae* was most common with 13 species (2 genera) followed by *Filinidae* 2
species (1 genus), Lecanidae one species and Testudinillidae one species. Of these, the genus Brachionus was represented by 10 species, while the 3 species belonged to genus Keratella, 2 species belonged to genus Filiinia and one species belonged to genus Lacana followed by Testudinella. These 17 species belong to genus Brachionus, Keratella, Filinia, Lacana and Testudinella. Cladocera belonging to two orders (Ctenopoda and Anomopoda) under the class Branchiopoda were found collected from the study area. The species diversity of Cladocerans in studied all the five sampling sites. Cladocerans were the second dominant group of Zooplanktons. The number of Cladocerans was found to be maximum in station IV during summer season and minimum were seen in station V during monsoon season. The present study, Cladocerans community comprising of 15 species belonging 5 families which are, Sididae, Daphniidae, Moinidae, Bosminidae and Chydoridae. In the present study, 15 species of Cladocerans belonging to 5 families and 10 genera were recorded. The 5 genus consists of Diaphonasoma, Ceriodaphnia, Daphnia, Moina, Biapertura, Bosminopsis, Bosminia, Chydrous, Alona and Pleuroxus. Of the families, Chydoridae was most common representative with 6 species (3 genera) followed by Moinidae 3 species (2genera), Sididae 2 species (2genera), Daphniidae 2 species (2 genera) and Bosminidae 2 species (2genera) were identified. Of these, the genus Diaphanasoma was represented by 2 species, while the 2 species belonged to genus Moina, 2 species belonged to genus Chydorus, 2 species belonged to genus Alona, 2 species belonged to genus Pleuroxus and one species belonged to genus Ceriodaphnia followed by Daphnia, Biapertura, Bosminopsis and Bosminia were also identified and described . The copepods constitute dominant planktonic group of both freshwater and marine habitats. It includes three free living groups viz., Calanoida, Cyclopoidea and Harpacticoida They play a vital role as primary consumers in the aquatic ecosystem. It is interesting and noteworthy to record that Calanoid-Copepod and Harpacticoid – Copepod group were completely absent in all the 5 sites during the entire study period in the surface waters of Kukkarahalli Lake. Hence, the copepods described here includes only the abundance of Cyclopid-Copepods. Cyclopoids representing one order Cyclopoidea were found from the study area. The present study, Cyclopoid - Copepods community comprises of 3 species belonging one family Cyclopidae. In the present study, 3 species of Cyclopoid - Copepods belonging to 3 genera were recorded. The 3 genus consists of Mesocyclops edax, Mesocyclops thermocyclopoides and Cyclops virids. Two species belonged to
genus *Mesocyclops* followed by *Cyclops*. The number of Cyclopoid - Copepods was found to be maximum in station IV during summer season and minimum were seen in station V during monsoon season. Monthly variations in Cyclopoid – Copepod diversity of three species belonging to *Cyprididae* of sites. It is interesting to note that Cyclopoid – Copepods (*Mesocyclops edax, Mesocyclops thermocyclopoides and Cyclops virids*) were completely absent in two sites (Site-I and Site-II) the entire study period in the surface waters of Kukkarahalli Lake. Ostracods representing one order Podocopida were found in the study area. The present study, Ostracods community comprises of 7 species belonging one family (*Cyprididae*). In the present study, 7 species of Ostracods belonging to 7 genera were recorded. The 7 species consists of *Eucypris bispinosa, Hemicypris sp., Cyclocypris leavis, Cypris protubera, Standesia elongate, Cyclocypris globosa, Hemicypris fimbriatus*. The number of Ostracods was found to be maximum in station IV during summer season and minimum were seen in station V during monsoon season.