Chapter 1

INTRODUCTION
Micro-Crustacea, which represent an important component of freshwater zooplankton, play a pivotal role in aquatic food chains and serve as a link between the phytoplankton on which they feed and the carnivorous invertebrates and vertebrates for which they form an important item of food. It has been worked out beyond doubt that zooplankton groups (especially Cladocera and Copepoda) form an important
food item of fish fingerlings (Penyuk, 1960; Chikova, 1970) and Jarvi (1919) even connected the migration of planktivorous fish to the near surface water layer in the evening with the movements of zooplankton. The great fishing areas of the world are usually in plankton-rich regions, and the zooplankton in these areas is largely composed of crustaceans. More surprising of zooplankton communities is their potential value as the indicators of the trophic status of waters. It is because the community structure and composition of zooplankton are highly affected by eutrophication (Deevey, 1942; Hasler, 1947; Patalas, 1972). It has also been put forth by Williams (1963) that pollution alters the normal population patterns of different organisms.

Several studies have been conducted on the micro-Crustacea in India and abroad (Birge, 1893, 1910 & 1918; Liljeborg, 1900; Carl, 1940; Ganapat, 1943; Frey, 1966; Ueno, 1966; Guade, 1969; Anderson, 1971; Patalas, 1971; Moitra & Mukerji, 1972; Burgis, 1973; Patalas and Salki, 1973; Baquai & Rehana, 1974; Smirnov, 1974; Whiteside et al 1978; McNaught, 1975; Zago, 1976; Allan, 1977; Brandle & Fernando, 1979;

The waterbodies of Kashmir, ranging from puddles, pools, through rivers and large lakes of varied trophy, have been playing a great role in the social, cultural and economic status of the region since ancient times. Besides being the most enchanting recreational spots for water skiing, swimming and boating, the aquatic systems of the valley are also a great resource of natural products like fish, fodder and a variety of other economically important aquatic plants. In return to all these benefits they (waters) get nothing but the incessant merciless onslaught from the so-called highly advanced man.

It has already been felt that the quality of freshwaters is progressively changing in most parts of the world as a result of man's activities through an increase in the level of chemical solutes and by physical disturbances (Hasler, 1947; Olsen, 1964; Taylor, 1965). In Kashmir too, the defiling of these watermasses is so brisk that the
day does not seem to be much far-off when we shall see complete death of certain most important aquatic assets of the State. Control of such adverse changes provides a challenge to both the general public and the researchers, more specially to the latter. The primary requirement in meeting this is adequate monitoring of the waters concerned so that they can, as far as possible, be saved for the future generations.

The freshwaters of Kashmir have received attention of only a few workers and only a few reports on the micro-crustacean communities of the different aquatic systems of the valley are available (Qadri & Yousuf, 1980; Yousuf & Qadri, 1983; Yousuf et al, 1983, 1984; Balkhi et al, 1987). As such, there are large gaps in our knowledge of the geographic distribution, environmental tolerance and the basic ecology of micro-Crustacean plankton of Kashmir waters. In the past, small aquatic ecosystems and the littoral regions of the larger waterbodies have received very little attention, especially in Kashmir, where innumerable water expanses of small size are scattered throughout the valley. Very few studies of these littoral regions have been conducted
even though they are a conspicuous and integral part of any freshwater ecosystem. In some cases, they contribute a major share of the production of a waterbody (Straskraba, 1965). Likewise, small lakes, ponds/pools and even some ditches provide more suitable systems for the study of fisheries, fish culture, and other applied research since they are more manageable.

Therefore, it was decided that sufficient data on the littoral micro-Crustacea and the water-chemistry of as many waterbodies in Kashmir as possible would be collected.

This aim in view, one hundred waterbodies ranging from temporary puddles to voluminous lakes were studied for the distribution and ecology of micro-Crustacea over a period of three years. Data collections were made on seasonal basis from twenty-nine perennial waterbodies. Rest of the waters were either seasonal or were inaccessible during some seasons of the year. As such, data from these waters were collected only once or twice in a year.

The study involved a detailed analysis of
the species composition, abundance & distribution and the ecology of micro-Crustacea. The study of the ecology of micro-Crustacea included the analysis of the abiotic & biotic environment of the group. As such, the species composition, abundance & distribution of Rotifera plankton, survey of macrophytic associations in the waters and the important abiotic factors of the waterbodies concerned were also studied along with the micro-crustacean community and the data collected during this study are presented in the present thesis.