CHAPTER I
INTRODUCTION
Parasite ecology is concerned with the distribution and abundance of parasites in space and time on or inside the hosts, and also involves the study of factors regulating host parasite interactions at different levels. It is, therefore necessary to be clear not only about what is meant by a parasite relationship but also to try and express it in quantitative terms. (Kennedy 1975).

The quantitative aspects of helminth parasites have been regarded by Crofton (1970a), as important and integral to parasitology. He has redefined parasitism as an ecological relationship between the populations of the
two different species. One of these is referred as parasite and the other as host species. The features of this ecological relationship are as:

i) the parasite is physiologically dependent on the host

ii) the infection process produces or tends to produce an overdispersed distribution of parasites within the host populations

iii) the parasites kill the heavily infected hosts.

iv) the parasite species has higher reproductive potential than the host species.

Regulation of parasite population is an outcome of an interplay of various interactions like inter and intra specific competition (Kennedy and Lord 1982; Uzananski and Nickol 1982; Munro et al 1989; Bates and Kennedy 1990; Dobson and Keymer 1990; Koskivaara et al 1992; Amin 1992; Cone and Roth 1993), seasonal changes (Boxhall 1974a; Burreson and Olson 1974; Dronen et al 1982; Amin 1985-86; Morvec 1984, Yakushev, 1984; Koskivaara et al 1991), host morphometric characteristics (Chappell 1969b; Anderson 1974; Dyer et al 1980; Adams 1984-86; Amin 1986) and distribution of the parasites in their final and intermediate host (Boxhall 1974b; Amin 1975, 1978, 1982 & 1985; Bretty 1980; Gleason 1984 & 1987; Cone and Roth 1989; Lasee, 1989; and Madahvi & Rukmini
In India the work on the temporal and spatial distribution of different parasites vis-a-vis freshwater fishes has been carried out by Mukherji (1966); Malhotra (1981); Malhotra and Chauhan (1980a and 1980b); Gupta et al (1984); Agarwal (1986); Chauhan (1989); Chauhan and Malhotra (1984); Chauhan et al, (1981); Chopra et al (1984) and (1985); Rajashwari and Kulkarni (1985); Firdous (1986); Madhavi (1979 & 1980); Madhavi and Rukmini (1991).

Most of the aquatic habitats of the valley particularly those at relatively low altitudes are commercially exploited for the catch of different fish species such as Oreinus spp., Schizothorax spp., Crossoscheilus spp., Nemachilus spp., Botia spp., Glyptothorax spp. Although a number of studies have been made on the parasites of freshwater fishes inhabiting these waters, most of the reports are of taxonomic nature (Kaw, 1941; 1950 & 1951; Fotedar, 1958 & 1970; Fotedar and Dhar, 1970 & 1977; Fotedar and Parveen, 1986, Dhar and Raina, 1970; Dhar and Kharoo, 1984, Chishti and Bakshi, 1992 & Ahmed and Chishti, 1994). The few reports on the ecology of fish helminths so far published (Dhar and Peerzada, 1989 & 1992, Chishti and Peerzada, 1995), are of elementary nature and pertain to the Wular lake. As such a
large gap still exists in our knowledge about the parasite ecology vis-a-vis fish distribution and abundance in different aquatic habitats of the Kashmir valley.

It was with this background that a comprehensive study of the helminth parasites infecting high altitude fishes in three snowfed streams - Lidder, Arpath and Brengi, which are the main tributaries of the river Jehlum in Anantnag district, was undertaken during 1992 to 1994. The streams are commercially exploited for fish by the fishermen for their livelihood. Besides they are of great attention to the anglers from all over the world. The streams are maintained for this purpose by J & K Fishery Department.

The study attempted to evaluate the nature of parasitism in different fishes of these streams. In this regard fish parasite survey was made in a large number of hosts to understand their geographical distribution and host ranges. Morphometric features such as length and weight and age and sex of the hosts were correlated with the rate of infection, to assess the degree of parasitism. Seasonal occurrence and maturation patterns of the parasites were also studied during the course of investigation. The data obtained on these and other parameters are described and discussed in this thesis.