Temperature, as one of the most important environmental factors, is known to play a vital role in the ecophysiology of organisms. The temperature of an animal's body has profound effects on function. Hence, animals display several different types of relationships with their thermal environment. Most of the poikilothermic animals, more or less like the homeotherms possess the ability to regulate their metabolism against the ambient thermal variations without allowing it to rise up to dangerously high levels with rising temperature or to drop down to depressingly low levels with falling temperature. Therefore, it is of considerable ecophysiological interest and significance that most poikilotherms, more or less like homeotherms, have developed, though in a limited sense, considerable degree of independence in their metabolism and activity from the thermal variations in the environment (Precht et al., 1973; Hazel and Prosser, 1974).

Temperature comes under loading stresses of the environment. Hence, thermal adaptation involves a number of active processes with energy expenditure for metabolic reorganization (Hochachka, 1967, 1969; Hochachka and Somero, 1973). Therefore, temperature compensation in poikilotherms is exhibited at the individual level, cellular level and the sub-cellular level involving the enzyme systems. In this aspect, extensive work has been done and voluminous data is existing on the general physiological and biochemical mechanisms involved during thermal adaptations in poikilotherms especially in fishes (Kinne, 1964; Fry, 1964;
1971; Prosser, 1965; Pampapathirao, 1965; Hochachka, 1967, 1969; Hochachka and Somero, 1969; Parvatheswararao, 1973; Precht et al., 1973; Hazel and Prosser, 1974; Bashamohideen, 1979). This is the outcome of a great deal of work investigated since several decades in the field of thermal adaptation in poikilotherms. The occurrence of greater stress in the form of 'heat shock' and 'cold shock' was reported earlier only during extreme environmental temperatures, but the phenomenon of stress could not be identified within the normal range of temperature with due importance to the rate and duration of thermal exposure.

In recent times, it was found necessary and possible to distinguish and differentiate the adaptations, may be thermal or osmotic or any other, from other phenomenon like 'stress-effects' and 'stress-adaptation', which could be easily mistaken for this adaptations in general (Kunnemann and Precht, 1975; Bashamohideen and Kunnemann, 1979; Braun and Gronow, 1975; Grigo, 1975; Bashamohideen, 1984). Thanks to the pioneeering works of Precht and his collaborators on this new approach of differentiation of environmental-stress from environmental-adaptation. The year 1975 heralded the beginning of a new era of approach for differentiation of thermal-stress phenomenon from thermal-adaptation process. Where, it has been indicated that when poikilothermic animals are subjected to thermal changes and when the process of acclimation is complete, one has to differentiate between possible thermal adaptation from thermal stress. These studies indicated that, an abrupt temperature change, within the normal range of temperature, acts as a stressor and temporarily...
inhibits the adjustment of metabolism to a new temperature, and "stress" is a physiological load acting upon animal or man, and the factors causing the stress are termed as "stressors". Whereas, a very slow temperature change within the normal range, generally results in the process of adaptation, probably without physiological load on the part of the animal.

The problem of stress, in relation to the fish and fisheries biology have received increasing attention during the past decade. Information is scattered throughout the scientific literature. However, the outcome of the symposium 'stress in fish' which was held at the University of East Anglia, Norwich, in England in the year 1980 has also greatly provided good background in understanding the phenomenon of stress and adaptation in general in the case of poikilothermic animals such as fishes. Therefore, an attempt is made in this investigation to distinguish and differentiate temperature-stress phenomenon from temperature-adaptation processes in detail to understand the possible physiological and biochemical mechanisms underlying during the 'stress' and 'adaptation' processes in the case of eurythermal teleost, *Tilapia mossambica*, which has been selected as the ideal experimental animal by virtue of its omnivorous feeding habits, easy availability and its capacity to adapt to varied environmental conditions, particularly to the environmental temperature. Further studies involving hormonal changes etc., on this line of work could not be undertaken in view of limitation of time and requirements for Ph.D., programme.