INTRODUCTION

Fish occupies an important place in the Indian mythology, history and tradition. A biblical story credits them with one of the first creatures to have been created; when God separated the land from the waters and invested the latter with living forms. From the time immemorial, India has been utilizing her marine resources especially for food. This has even been depicted at the excavation sites of Indus valley Civilization as early as 2500 B.C. Man from antiquity has understood the importance of fish as food. Fishes have great significance in the life of humankind, being an important source of rich protein. To enhance production, its culture and propagation in the confined waters have been undertaken in most of the developing countries.

In a developing country like India, the importance of fisheries needs no emphasis. To meet the increasing demand for protein rich food, to earn valuable foreign exchange and to provide gainful employment to the coastal rural population, the development of fisheries has been assigned the highest priority in the national five-year plans since the post-independent period. The utilization of the aquatic resources for developmental purposes such as pisciculture, fish farming etc, on par with land agriculture, animal husbandry and poultry farming has gained considerable attention in recent times.

The need for enhancing food production to cope with the ever-increasing population, has assumed vital importance all over the world. The perspective plan of United Nation’s Food and Agricultural Organization for agricultural development estimates that in order to meet the fish demand for consumption and industry in the 20th century, the present production of fish and shellfish has to be increased at least by 77 million tonnes. It is roughly estimated that $\frac{2}{3}$rd tonnes of the total fish catch in India is derived from the sea and only $\frac{1}{3}$rd tonnes come from inland waters. The present day demand of fish food protein for the millions
of people in India is 8.5 million tonnes and the present production is only \( \frac{1}{5} \) of the total requirement. Under these circumstances the exploitation of the Indian water resources in a scientific manner is a must in order to tackle the deficit food situation in the country.

The principal constraints facing the inland fisheries is the under utilization of the existing water bodies. It has therefore become imperative to evolve a master plan for development of the inland water fisheries and careful management of the available inland water resources. The scientific management of the aquatic resources involves various interrelated aspects such as the physical, chemical and biological characteristics of the environments, manipulation of the living stock and proper management techniques for exploitation.

A thorough knowledge of these fundamental aspects is a pre-requisite before tackling the problem of a virgin aquatic environment. An ecological approach to the management of aquatic resources is a basic pre-requisite for the effective utilization of the available waters suited for fish culture. Next is the thorough knowledge of the fish behaviour and its biological features. These factors seem to be vital in order to make the best use of these natural resources and to avoid improper utilization such as irregular fishing, which eventually cause a disturbance in the 'ecological niche' leading to extinction of certain varieties.

Ever since the significance of these factors was felt, the study of fish biology and its relation with the ecological characteristics of the surrounding media has been attracting the keen interests of several workers. The main objective of this study is to develop background knowledge about the biology, stock position and abundance of the fish, *Etroplus suratensis* that would in turn help the aquaculturists in their venture to experiment with a fish, which is not less important than crustaceans.
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Hence, the present study was carried out to provide information on the ecological and biological aspects of the fish, *Etroplus suratensis* commonly called as 'pearl spot' from the Kali estuary.

The thesis has been organized in five chapters. The systematic position of the fish *Etroplus suratensis* along the Kali estuary and their distinguishing characters for identification together with taxonomic features are presented in chapter 1.

The various ecological parameters along with the biotic factors of the natural habitat of the fish have been presented in chapter 2.

Chapter three deals with the biological studies of the fish. It has been again divided into three subchapters. The food and feeding habits of *Etroplus suratensis* along with the qualitative and quantitative analyses of the stomach contents and the intensity of feeding with reference to different length groups, sex, size, maturity stages and season are discussed in subchapter 3.1.

The results of the length–weight relationship of the fish formed the subject matter of subchapter 3.2.

Subchapter 3.3 deals with the reproductive biology of the fish which includes studies on maturity stages, length at first maturity, spawning season, recruitment pattern, development of ova to maturity, spawning periodicity, relative condition factor, fecundity and sex ratio.

Chapter 4 presents the stress studies on *Etroplus suratensis*, wherein four metals namely Mercury, Copper, Zinc and Cadmium were used to analyze the acute toxicity of the above-mentioned heavy metals by way of bioassay studies. So also
the effects of the metals on the respiratory rate of the juveniles are also discussed in this chapter.

Disease studies and the incidence occurrence of the parasites are discussed in the sub chapter (4.1).

Chapter (5) deals with the biochemical composition of the fish species with reference to its maturity stages, size groups, and seasonal variations.