PART - I

GENERAL
INTRODUCTION

Fishes occupy an important place in human diet, economy and ecosystem. Like other vertebrates, fishes too harbour parasitic population of diverse group of helminth parasites, which have detrimental effect on the fishes in many ways like stunted growth, postponement of sexual maturity, damage to various organs thus affecting the yield of fish production. The study of fish pathology is of much importance both from the point of view of fishery management and also to check the spread of human and animal diseases for which fishes act as carriers. The success of implementation of a various fishery development programmes depends to a certain extent of the intensification of fish parasitological research, as the improvement of fish production can be achieved from healthy fish stock only.

During the last five decades, lot of work has been done on the morphology and taxonomy of parasites of fishes. These researches have contributed a lot to our knowledge of many genera and species, both known and new. Still our knowledge on fish parasites and diseases is very meagre and we have no knowledge of the amount of damage caused and loss incurred in total fish production and fish products due to parasites and parasitic diseases.
With the above background in mind, the present study was undertaken. The studies presented in the thesis are based on the study of material collected from extensive survey of digenetic trematodes from Betwa and Ken rivers passing through the Bundelkhand region only.

The Bundelkhand region has a number of small and large water bodies, lakes, dams and two rivers which provide better fisheries and aquaculture prospects.

This region forms South-east boundary of Uttar Pradesh, extending from 24.21' to 26.42' North latitude and 78.14' to 81.38' East longitude. It is comprised of five districts, namely - Jhansi, Lalitpur, Jalaun, Hamirpur and Banda. The region is surrounded in northern side by the districts of Etawah, Kanpur, Fatehpur and Allahabad of Uttar Pradesh.; in Western side by the districts of Guna, Shivpuri and Datia of Madhya Pradesh.; and in Southern side by the Districts of Sagar, Chattarpur, Panna of Madhya Pradesh.

The Betwa and Ken are the only two major rivers of this region which extend from one end of Bundelkhand region to the other. The water remains in them throughout the year. All popular groups of fishes form the bulk of total production of this region. The daily fish-output from this
region is 30 to 40 metric tons in off season and 50 to 80 metric tons during the season. The whole collection is exported to different important areas of the country after satisfying the regional requirements. All popular groups of fishes such as major carps, cat fishes, live fishes, feather backs, sheet fishes, eels etc. form the bulk of total production of this region.

The present work pertains to a group of air-breathing fishes, commonly available in fresh water bodies of the region namely *Clarias batrachus* (Linn.), *Heteropneustes fossilis* (Bl.) and species of *Channa*. These include *Channa punctatus* (Bl.), *Channa striatus* (Bl.) and *Channa marulius* (Ham.). Out of the five species of *Channa* available in Uttar Pradesh, *Channa gachua* (Ham.), *Channa marulius* (Ham.), *Channa punctatus* (Bl.), *Channa striatus* (Bl.) and *Channa leucopunctatus* (Bl.), only the above mentioned three species are available in the water of Mathura district. These fishes are predatory in nature. Since these fishes remain alive for a long period out of water, so they are usually marketed alive and also known as live fishes. These fishes are easy to handle in laboratory. Though these fishes are mostly non-commercial, yet they have their own economic value and great demand due to their high protein, high iron and low fat contents compared to that in carps. *Clarias batrachus* (Linn.) and *H. fossilis* (Bl.) are considered to be highly nutritious
and esteemed as food where as species of *Channa* are eaten mostly by poor classes.

Thus efforts have been made to concentrate the work on these host fishes and to obtain maximum number of parasites from them throughout the period of study.

In order to make the faunistic studies more elaborate and objective, host-parasite relationship has also been studied and analysed statistically, in order to study index of total helminth infection; host-wise analysis; overall incidence; level and intensity of parasitization; seasonal incidence; and intensity of infection in trematodes. Such calculations can help considerably in the correct understanding of the nature and extent of their pathogenic role.

The present findings definitely contribute to the general survey of the parasitic fauna of this region. It may help the pisciculturists in understanding better the effect of parasitization on the fishes, thus helping to increase the production of fish as food to human beings.
HISTORICAL RESUME