

Distribution of Cestodes in the Digestive Tract of Indian Hill-stream Fishes

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INTRODUCTION

Literature on distribution of helminths in the digestive tracts of fishes inhabiting different riverine and pond ecosystems has been reviewed by Williams *et al.* (1970), Kennedy *et al.* (1976), Hine (1980a, 1980b) and Hine and Francis (1980). It is a widely accepted opinion that the parasites prefer the habitat which is most suitable for their survival. In the digestive tract conditions differ in its different parts. Crompton (1973) argued that the distribution of helminths in the alimentary canal is affected by the conditions found therein. Smyth (1962) observed that the region behind pyloric region sphincter in vertebrates is favourable physiologically to the majority of helminths. Physiological factors affecting the distribution of helminths in the host's digestive tract have been studied by Crompton (1973) and Williams *et al.* (1970). This investigation deals with the sites occupied by six species of cestodes in the digestive tract of nine species of fishes inhabiting in the Himalayan riverine ecosystems.

MATERIALS AND METHODS

Parasitological surveys on 2,595 hill-stream

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fishes of 9 species *viz.* *Barilius bendelisis*, *B. bola*, *Garra gotyla gotyla*, *Labeo dero*, *L.rohita*, *Mastocembelus armatus*, *M. pancalus*, *Schizothorax richardsonii* and *S. plagiostomus* were made for cestode infection from May 1979 until April 1981. The fishes were trapped from Khoh river system (395-450 mASL) (Fig. 1) and Nayar river system (600-650 mASL) (Fig. 2) in the Garhwal Himalayas.

Cestodes were collected by making longitudinal slit in the digestive tract of fishes. The parasites thus collected were prepared for identification by the usual method (Malhotra, 1983). The cestodes were identified as *Ptychobothrium nayarensis* (Malhotra), *Polygonchobothrium armatii* (Malhotra), *Senga nayari* (Malhotra), *Bothriocephalus teleostei* (Malhotra), *Mackiewiczia satpuliensis* (Malhotra) and *Guptaia garhwalensis* (Malhotra). The exact position and number of

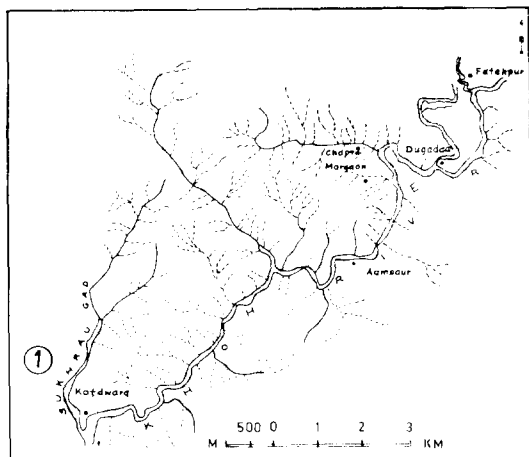


Fig. 1. Khoh River system.

inhabited in stomach than fewer (22.36%) in the intestine of *B. bola* (Fig. 3A). Of the other parasites, *P. nayarensis* (Fig. 3B), *M. satpuliensis* (Fig. 3E) and *G. garhwalensis* (Fig. 3F) exclusively inhabited in the intestinal bulb of *S. richardsonii*. *P. armatii* inhabited in the intestine near pyloric sphincter region of the alimentary canal in *M. armatus* (Fig. 3C). Though more (% in stomach/intestinal bulb; intestine in parentheses) *P. nayarensis* (27.78%; 72.22%) in *B. bola* (Fig. 38) and *B. teleostei* (40.74%; 59.26%) in *S. richardsonii* (Fig. 3A) were recorded from intestine than stomach/intestinal bulb and *B. teleostei* in *G. g. gotyla*, *L. dero*, *L. rohita* and *S. plagiostomus* infested only in the intestine (Fig. 3A), distribution of all these parasites infesting in the intestine was restricted to anterior part of intestine only. On the other hand though the specimens of *S. nayari* were observed inhabiting both the stomach and intestine of *M. armatus*, contrary to the observations on *B. teleostei* in *B. bola*, greater number of worms (77.34%) inhabited intestine while only fewer worms (22.66%) were encountered in stomach (Fig. 3D).

The observations as mentioned above for all the parasites except *S. nayari* find support from the analysis of work by several authors (Read, 1950; Smyth, 1962; Chauhan *et al.*, 1981) who reported the region around pyloric sphincter in vertebrates is favourable physiologically to the majority of helminths as it is relatively calm and rich in highly nutritive food material. The pancreatic duct opens into this region and according to Barrington (1957) it is characterized by such digestive activity in fishes. Thomas (1964) observed this region to be particularly suitable for the small trematode *Crepidostomum metoecus* as additional shelter is provided for it in the pyloric caeca. Barrington (1957) observed that the conditions differ in the intestinal part of the alimentary canal as much of the digested food is absorbed in the pyloric caeca region and the intestinal contents are subject to greater movement (Smyth, 1962). The observations on *B. teleostei* and *P. nayarensis*

conform well to the opinion of Barrington (1957) and Thomas (1964) in that since any special kind of strong adhesive apparatus is lacking in these cestodes, a relatively calm region of alimentary canal *viz.* the region around pyloric sphincter or the anterior part of intestine is preferred than the relatively latter part of the intestine.

ABSTRACT

The distribution of *Bothriocephalus* sp., *Guptaia* sp., *Mackiewiczia* sp., *Polyonchobothrium* sp., *Ptychobothrium* sp., and *Senga* sp. in the alimentary tract of nine Indian hill-stream fishes are described. Though the region around pyloric sphincter was preferred by most cestodes, *Senga* sp. enabled its existence even in the latter part of intestine apparently because of its well developed adhesive apparatus on scolex.

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