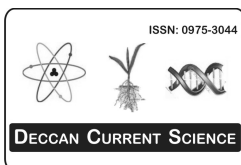


Research Article



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Abundance of a Monogenoidea parasite *Lobotrema rajendrai* in different host species (*Garra gotyla* and *Tor putitora*) at Kotdwar (Uttarakhand)

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Abstract:

On examining 87 specimens of *Garra gotyla* and 74 of *Tor putitora* only a single monogenean parasite viz., *Lobotrema rajendrai*, was recovered from the gills of the fish collected from river Malan at Kotdwar. The length groups of chosen fish were categorized into 12 categories at a difference of 2 cm. The parasite could not be obtained in the fishes under the length group of < 10, 10-12 and 12-14 cm. *L. rajendrai* was recovered in the fish *Garra gotyla* starting from 14 cm. in length upto 26 cm. while in the fish *Tor putitora* the parasite was recovered 18 cm. onwards and upto 28 cm. More infection was recorded in 20-22 cm. length group followed by 16-18 cm. and 18-20 in the fish *Garra gotyla*. As far as the maximum abundance of parasite in both the fishes is concerned, from *Garra gotyla* it was in between length group 20-22 cm. while in *Tor putitora* it was in the range of 22-24 cm.

Key Words: Monogenoidea parasite, *Lobotrema rajendrai*, fish *Garra gotyla*, *Tor putitora* Kotdwar, Uttarakhand

Introduction:

In majority of the parasite-host system analysed, there is a positive correlation between the abundance of parasitism and the fish size. In some of them the parasites is present from the lowest size-classes while in others a threshold size situated inside the limits sample has been observed. According to Saad-Fares and Combes (1992) in parasite host systems, three types of relationships between parasitism and host size have been observed. Firstly, there is the relationship

between the number of parasite species and the maximum size of the host. Secondly, there is the relationship between the number of parasite species and size of individuals of a particular host species. In this regard, Holmes (1990) showed that the number of species of helminths was positively correlated with the size of the fish *Sebastes nebulosus*. Lastly, there is the relationship between a demographic parameter (prevalence, intensity, abundance etc.) of parasitism and the size of individuals of a particular

host species: invasion of a host population by an adult trematode follows a pattern related to age of individual host.

As no comprehensive study is being made on the abundance of parasite species in fish host in general and from Garhwal region in particular, henceforth, the present study deals the abundance of same parasite (*Lobotrema rajendrai*) from the gills of different length groups of hosts (*Garra gotyla* and *Tor putitora*) collected at Malan river Kotdwar.

Material and Methods:

During the study period (December 2008 – January 2010), the fish specimens were collected from river Malan at Kotdwar, with the help of fishermen by using relevant fishing nets. In all, 87 specimens of *Garra gotyla* and 74 specimens of *Tor putitora* were collected and all the specimens were examined for parasitic infestation. Firstly, the length groups of chosen fish were categorized into 12 categories at a difference of 2 cm. and thereafter the microscopic examination was done for parasitism and for any cyst, ulceration and scares on and inside the body of each fish. Then the gill filaments were dissected out of branchial cavity and placed in petri dish containing normal saline. For the collection of monogenoides, all the collected parasites were processed using standard techniques. Identification of parasites was performed using standard keys and catalogues (Yamaguti 1963). Ecological studies have been performed according to Margolis *et al.* (1982). Abundance (%) was calculated as

$$= \frac{\text{Number of parasites} \times 100}{\text{Number of fish examined}}$$

Results:

In the present study, the same parasite species viz. *Lobotrema rajendrai* was recovered from the gills of *Garra gotyla* and *Tor putitora* at Kotdwar. The length groups of chosen fish were categorized into 12 categories at a difference of 2 cm. [Table 1; Fig. 1]. The parasite could not be obtained in the fishes under the length group of < 10, 10-12 and 12-14 cm. Further, *L. rajendrai* was recovered in the fish *Garra gotyla* starting from 14 cm. in length upto 26 cm. On other hand, parasite was recovered 18 cm. onwards and upto 28 cm. in *Tor putitora*. More infection was recorded in 20-22 cm. length group followed by 16-18 cm. and 18-20 in the fish *Garra gotyla*. On the contrary, in *Tor putitora* the parasites were collected between 18-28 cm. length groups. As far as the maximum abundance of parasite in both the fishes is concerned, from *Garra gotyla* it was in between length group 20-22 cm. while in *Tor putitora* it was in the range of 22-24 cm.

Discussion:

The fact that the same monogenoidea parasite species offers similar infection dynamics when present in more than 2 species of fish host seems to favour the hypothesis of infestation by prey, which the fish selects on the basis of size (Price and Clancy, 1983; Guegan, 1990). With regard to abundance of parasite in different length groups of fish hosts, the findings of the present study slightly resemble with Saad-Fares and Combes (1992) but differ in the nature of parasitic infection.

According to the findings of Saxena (2001) the same trematode species offers

similar infection dynamics when present in different fish species i.e. *Eucreadium pandeyi* Srivastava et al, 1983 infects both *Channa punctatus* and *Mastacembelus armatus* while *Gangatrema hanumanthai* Kumar and Tripathi 1990 was recovered from *Xenentodon cancila* and *Labeo dero*. Our findings differ with Saxena (2001) with regard to the kind of parasite as in the present study the parasite is a monogenetic trematode.

The findings of present study reveal that the infection was more in a particular range of fish size; below and above to that particular range the infection decreases. Almost similar observations were recorded by Saxena (2001) while undertaking studies on fish trematode diversity in the Garhwal riverine ecosystem.

Conclusively, it is worked out the fact that the same trematode offers similar infection dynamics when present in different fish species seems to fulfil the hypothesis of the infestation by prey in which the fish is selected on the basis of size.

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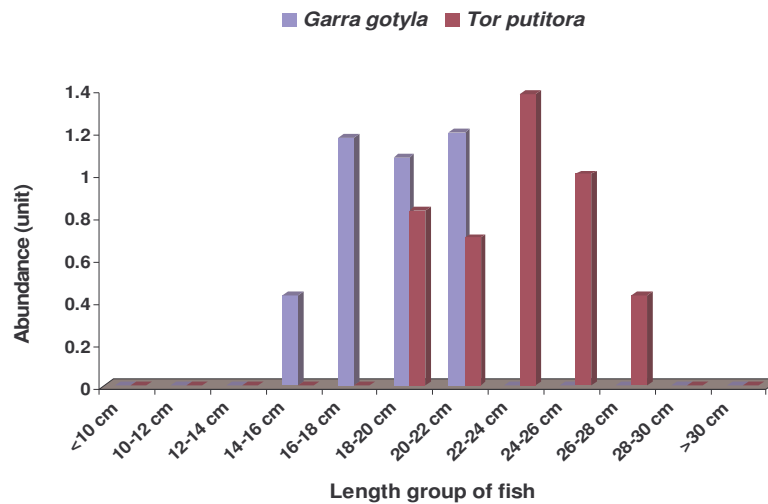
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Table 1: Infection and abundance of monogenean parasites, *Lobotrema rajendrai* in different length groups of the fishes (*Garra gotyla* & *Tor putitora*) during study period.

Length Group (cm.)	<i>Garra gotyla</i>				<i>Tor putitora</i>			
	No. fish		No of Parasites recovered	Abundance	No. fish Examined	No. fish Infected	No of Parasites recovered	Abundance
	Examined	Infected						
<10	4	-	-	-	4	-	-	-
10-12	9	-	-	-	3	-	-	-
12-14	9	-	-	-	5	-	-	-
14-16	7	2	3	0.43	7	-	-	-
16-18	6	5	7	1.17	9	-	-	-
18-20	12	8	13	1.08	6	3	5	0.83
20-22	15	12	18	1.20	10	5	7	0.70
22-24	20	-	-	-	8	6	11	1.38
24-26	5	-	-	-	6	3	6	1.00
26-28					7	2	3	0.43
28-30					4	-	-	-
>30					5	-	-	-

**Fig. 1: Abundance of parasites (*Lobotrema rajendrai*) in 2 fish hosts (*Garra gotyla* and *Tor putitora*) of different length groups during 2008-2010.**