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## OBSERVATIONS ON LERNAEID PARASITES OF *CATLA CATLA* FROM A FISH HATCHERY IN MUZAFFARGARH, PAKISTAN

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### ABSTRACT

During the present study, 120 fishes (*Catla catla*) maintained at a fish hatchery in Muzaffargarh, Pakistan were examined for lernaeid parasites over a 12 months period from February 2000 to January 2001. Out of 120 *C. catla* fishes, 96 were infested, showing an overall prevalence of 80%. Six species of *Lernaea* recovered were: *L. cyprinacea*, *L. polymorpha*, *L. ctenopharyngodonis*, *L. arcuata*, *L. lophiara* and *L. oryzophila*. *L. cyprinacea* showed the highest parasite burden (3.61 parasites per fish), while *L. lophiara* had the lowest parasite burden (1.00 parasite per fish). The infestation was lowest in fishes with body length of 23.00-25.75 cm and maximum in 25.76-31.25 cm long fishes. Similarly, the parasitic infestation increased with body weight range of 160-258 gm to 456-553 gm, while almost no parasites were seen in heavier fishes (>553 gm).

**Key words:** *Lernaea* spp. parasite burden, body weight, body length, *Catla catle*.

### INTRODUCTION

Many species of the *Lernaea* (commonly called anchor worms) are parasities on freshwater fishes. Anchor worm infections usually result in a single parasite per host fish in flowing rivers and streams causing a little damage (Demaree, 1967), but in closed environments severe infestations often result. The adult parasites are particularly harmful to young fish because of their relatively large size and mode of attachment and feeding. Also the infested host may get secondary bacterial infections.

Keeping in view the importance of these parasites, the present study was designed to investigate the lernaeid parasites, parasite burden, the relationship between body weight and body length of *Catla catla* and lernaeid parasites.

### MATERIALS AND METHODS

A total of 120 copepode parasites belonging to *Lernaea* were studied in *Catla catla* over a 12 months period from February 2000 to January 2001 from a fish hatchery located in Muzaffargarh, Pakistan. The fishes were collected with the help of a dragnet kept in a water container, connected to an oxygen cylinder. During examination, fishes were dipped continuously into the water in order to keep them alive. The ectoparasites were collected with the help of forceps and were kept in the bottles containing fixative (5% formalin). The

parasites were collected with extreme care to prevent any damage to fish or parasite.

After collection of parasites, the characteristics of the host such as standard length and weight were also noted. The examined fishes were transferred to another water container so as to avoid the mixing of examined and unexamined fishes. The fishes were again released into the pond after the completion of work. The collected parasites were brought to the laboratory for further examination. The permanent mounts of the parasites were made (Cable, 1985) and identified with the help of keys given by Kabata (1985).

### RESULTS AND DISCUSSION

Out of 120 *C. catla* fishes, 96 were infested, showing an overall prevalence of 80%. A total of six species of lernaeid parasites were recovered. These included: *L. cyprinacea*, *L. polymorpha*, *L. ctenopharyngodonis*, *L. arcuata*, *L. lophiara* and *L. oryzophila*. The parasites were found to be present on the skin, around the eyes, mouth, on the gills and on the fins.

#### Parasite burden of *Catla catla*

According to the results of the present study *L. cyprinacea* showed the maximum parasite burden in terms of the number of parasites per fish (3.61). This was followed by *L. polymorpha* (3.02), *L. ctenopharyngodonis* (2.15), *L. oryzophila* (1.50), *L. arcuata* (1.10) and *L. lophiara* (1.00; Table 1).

**Table 1: The parasite burden of lernaeid parasites of *Catla catla***

Name of parasite	No. of parasites found	No. of fish infested	No. of parasites per fish
<i>L. polymorpha</i>	203	67	3.02
<i>L. ctenopharyngodonis</i>	41	19	2.15
<i>L. oryzophila</i>	3	2	1.50
<i>L. arcuata</i>	11	10	1.10
<i>L. lophiara</i>	5	5	1.00

The parasite burden of *Lernaea* spp. has been studied previously by other workers. *L. polymorpha* showed the highest parasitic burden in studies conducted by Tasawar *et al.* (1999a) and Tasawar *et al.* (1999b), while *L. cyprinacea* was reported to have highest parasite burden by Tasawar *et al.* (2001) and Tasawar and Shahzad (2001).

These results indicate that *L. cyprinacea*, *L. polymorpha* and *L. oryzophila* are more adapted to their fish hosts as compared to other lernaeid parasites. These adaptations could be morphological or physiological (Noble and Noble, 1982).

#### Relationship between fish body length and lernaeid parasites

As shown in Table 2, the parasites number was lowest in the smallest fishes (23.00-25.75 cm long). An increase was recorded in fishes having 25.76-31.25 cm body length, followed by a decline in larger fishes (31.26-34.00 cm). The same parameter has been studied in *Labeo rohita* by Tasawar and Hussain (1999) and

Tasawar *et al.* (2001). According to these investigations, either the parasites were not present on fish having small size or minimum number of parasites was found in smallest fishes. The absence of parasites on small size fish may be due to the small size of scales in fishes, where the parasites cannot maintain proper hold onto the body of the host. Moreover, a decrease in the parasites burden seen in the larger fishes (31.26-34.00 cm long) could be due to the development of acquired immunity (Tasawar *et al.*, 2001).

#### Relationship between body weight and lernaeid parasites

Results of the present study also revealed an increase in fish burden from 160 to 553 gm body weight fish (Table 3). However, almost no parasites were present in highest weight groups (above 553 gm). The decrease in parasite number or absence of parasite in highest weight group may be due to the acquired immunity against these parasites. Similar results have been reported earlier (Tasawar and Khurshid, 1999; Tasawar and Naseem, 1999; Tasawar *et al.*, 2001).

**Table 2: Relationship between body length and lernaeid parasites of *Catla catla***

Name of parasite	Body length of fish (cm)		
	23.00-25.75	25.76-31.25	31.26-34.00
<i>Lernaea cyprinacea</i>	71	126	85
<i>L. polymorpha</i>	36	90	77
<i>L. ctenopharyngodonis</i>	Nil	29	12
<i>L. arcuata</i>	1	1	1
<i>L. lophiara</i>	Nil	7	4
<i>L. oryzophila</i>	Nil	Nil	5
Total	108	253	184

**Table 3: Relationship between body weight and lernaeid parasites of *Catla catla***

Name of parasite	Body weight of fish (gm)					
	160-258	259-356	357-455	456-553	554-652	653-750
<i>Lernaea cyprinacea</i>	47	78	76	80	1	Nil
<i>L. polymorpha</i>	39	41	47	76	Nil	Nil
<i>L. ctenopharyngodonis</i>	Nil	6	21	14	Nil	Nil
<i>L. arcuata</i>	1	1	1	Nil	Nil	Nil
<i>L. lophiara</i>	4	5	2	Nil	Nil	Nil
<i>L. oryzophila</i>	4	Nil	Nil	1	Nil	Nil
Total	95	131	147	171	1	Nil

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