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## Prevalence of Copepod Ectoparasites of Mori Fish *Cirrhinus mrigala*

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### Abstract

One hundred and twenty mori fish, *Cirrhinus mrigala* (Hamilton, 1822), were examined over a period of one year, March, 1998 to February, 1999 at Govt. Fish Hatchery Mian Channu Punjab, Pakistan. The parasites recovered were *Lernae cyprinacea*, *L. polymorpha*, *L. oryzophila*, *L. lophiara* and *Lernaea* sp. The overall prevalence was highest (43.33%) for *L. cyprinacea* and lowest for *L. lophiara* (4.16%).

### Introduction

There are many species of crustaceans, particularly copepods, which parasitize fish. However the species which appear more abundantly in fish farms and which inflict injury are belonging to the genera *Lernaea* and *Argulus* (Fryer, 1956; Rushton-Mellor and Baxshall, 1994). Although the parasite fauna of fresh water and marine fish is fairly well known all over the world but unfortunately no published reports on the learned parasites of cultured fish has been documented in Pakistan. The present paper reports the prevalence of copepod parasites of the mori fish, *Cirrhinus mrigala*, on the government fish hatchery.

### Materials and Methods

Study was conducted on Government Fish Hatchery Mian Channu, District Khanewal. During the whole study period, a rearing fish pond was chosen. The fish were caught with the help of drag net. The captured fish were transferred to large plastic water container. The fish were kept alive during examination by dipping it into water at short intervals and identified with the help of keys given by Mirza and Sharif (1996). A total of 120 *Cirrhinus mrigala* (Hamilton, 1822) fish were collected from March 1998 to February 1999 at monthly intervals, ten fish per month. The parasites thus collected were preserved in 5 percent formalin for taxonomical studies and brought to the laboratory, Institute of Pure and Applied Biology, Bahaudin Zakaria University, Multan. The preserved specimens were washed twice in distilled water and transferred to 10 percent KOH for 24 hours. The permanent mounts were prepared by staining with Semichon's carmine (Khurshid, 1998) and identified (Cable, 1985).

### Results and Discussion

The study was started from March 1998 and continued until February 1999. One hundred and twenty mori fish, *Cirrhinus mrigala*, were examined from Fish Hatchery Mian Channu, for copepod ectoparasites. Five species of genus *Lernaea* were recovered during the present study. The species identified were *Lernaea cyprinacea* (Linnaeus, 1761), *L. polymorpha* (Yu, 1938), *L. oryzophila* (Monod, 1932), *L. lophiara* (Harding, 1950) and *Lernaea* sp.

Different species of the genus *Lernaea* had also been reported from other countries of the world. Gnanamuthu (1951) reported *Lernaea chackoensis* from *Catla catla* in Madras, India. Fryer (1956) reported *Lernaea bagri*, *L. lophiara*, *L. herding*, *L. tilapiae*, *L. palati* and *L. barniriall* from the fishes of Lake Nyasa, North Rhodesia. Noga (1986) examined the *Lernaea cruciata* (LeSueur) from *Micropterus salmoides* (Lecepede) in the Chowan River North Carolina, U.S.A. Woo and Shariff (1990) recovered *Lernaea cyprinacea* from *Helostoma temminckii* in Serdang Malaysia. The difference in the parasite fauna of the present study with these researchers may be due to different geo-climatic conditions between the different localities and also due to different hosts examined.

The prevalence of *L. cyprinacea* on mori fish was maximum (43.33%) followed by *L. polymorpha* (34.16%), *Lernaea* sp. (14.16%), *L. oryzophila* (7.5%) and *L. lophiara* (4.16%).

The different species of *Lernaea* has also been recovered from other fishes in Pakistan. On *Labeo rohita*, the prevalence of *L. polymorpha* was maximum (26.66%) followed by *L. arcuata* (5%), *L. lophiara* (5%), *L. cyprinacea* (25.83%) and *L. oryzophila* (26.66%) (Shahzad, 1999). The prevalence of *L. polymorpha* was found to be maximum (38.33%) on *Ctenopharyngodon idella* followed by *L. cyprina* (9.166%), *L. ctenopharyngodonis* (4.16%) and *L. lophiara* (3.33%). These findings are not comparable with results of the present study. The highest prevalence of *Lernaea* species on *Cirrhinus mrigala* is due to the fact that it is a bottom dweller fish and the parasitic stages are present in abundance at the bottom of the pond due to the water temperature (Khurshid, 1998).

Monthly prevalence of different species of *Lernaea* parasite was recorded (Table 1). The prevalence of *L. cyprinacea* was high in February (100%) and lowest in March (60%). Infestation was recorded during summer months of July and August. *L. polymorpha* showed maximum prevalence in January (100%) and decreased to zero in June, July and September. *L. oryzophila* was recovered only in (50%), May (20%), October (10%) and December (10%). In the remaining months, parasites were not found. In case of *L. lophiara*, the infestation was found only in April (30%) and January (20%). No infestation was recorded in one

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Table 1: Overall prevalence of Lernaeid Parasites of mori, *Cirrhinus mrigala*

Name of Parasite	No.of fish examined	No.of fish infested	Prevalence (%)
<i>L. cyprinacea</i>	120	52	43.33
<i>L. polymorpha</i>	120	41	34.16
<i>L. oryzophila</i>	120	9	7.5
<i>L. lophiara</i>	120	5	4.16
<i>Lernaea</i> sp.	120	17	14.16

months. *Lernaea* sp. also showed seasonal fluctuations and was maximum in winter months viz December (50%) and January (40%) and lowest in July (10 %). No infestation was recorded in other months.

In the present study, mixed infestation of various copepod Lernaeid parasites was also observed. Four species viz. *L. cyprinacea*, *L. polymorpha*, *L. oryzophila* and *L. lophiara* infested only 3 fishes out of 120. Two fishes were infested with *L. cyprinacea*, *L. polymorpha*, *L. oryzophila* and *Lernaea* sp. Only one fish was infested with *L. cyprinacea*, *L. polymorpha* and *L. lophiara* out of 120 hosts. *L. cyprinacea*, *L. polymorpha* and *Lernaea* sp. were found on 7 hosts.

The parasite burden per host of copepod Lernaeid parasites of *C. mrigala* was studied. *L. polymorpha* had highest parasite burden (4.07%) followed by *L. cyprinacea* (4.01%). *L. lophiara* (3.2%1, *L. oryzophila* (1.66) and *Lernaea* sp. (1.41%).

## REFERENCES

Cable, R.M., 1985. An Illustrated Laboratory Manual of Parasitology. Surjeet Publications, New Delhi, pp: 255-256.

Fryer, G., 1956. A report on the parasitic Copepoda and Branchiura of the fishes of Lake Nyasa. Proc. Zool. Soc. London, 127: 293-344.

Gnanamuthu, C.P., 1951. *Lernaea chackoensis* n.sp.: A copepod parasitic on two Madras fishes. Parasitology, 41: 143-147.

Khurshid, S., 1998. Seasonal changes in the copepod parasites of mori (*Cirrhinus mrigala*) from fish hatchery, Mian Channu (Punjab-Pakistan). M.Sc. Thesis, Institute of Pure and Applied Biology, B.Z. University, Multan, Pakistan.

Mirza, M.R. and H.M. Sharif, 1996. A Key to the Fishes of the Punjab. 1st Edn., Ilmi Kitab Khana, Lahore, Pakistan.

Noga, E.J., 1986. The importance of *Lernaea cruciata* (Le Sueur) in the initiation of skin lesions in largemouth bass, *Micropterus salmoides* (Lacepede), in the Chowan River, North Carolina, USA. J. Fish Dis., 9: 295-302.

Rushton-Mellor, S.K. and G.A. Boxshall, 1994. The developmental sequence of *Argulus foliaceus* (Crustacea: Branchiura). J. Nat. Hist., 28: 763-785.

Shahzad, M.F., 1999. Studies on the seasonal dynamics of copepod ectoparasites of silver carp (*Hypophthalmichthys molitrix*). M.Sc. Thesis, Institute of Pure and Applied Biology, Bahauddin Zakariya University, Multan.

Woo, P.T.K. and M. Shariff, 1990. *Lernaea cyprinacea* L. (Copepoda: Caligidea) in *Helostoma temminckii* Cuvier and Valenciennes: The dynamics of resistance in recovered and naive fish. J. Fish Dis., 13: 485-493.