

Seasonal occurrence of parasites of the major carp, *Cirrhina mrigala* (Hamilton) collected from Rajshahi, Bangladesh

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Abstract: The research work was conducted to find out the seasonal occurrence of parasites of the major carp, *Cirrhina mrigala* from different water bodies of Rajshahi district during April 2009 to January 2010. A total of 95 fishes were examined of which 72 fishes were infected. Thirteen species of parasites viz. *Trichodina pediculatus*, *Chilodonella cyprini*, *Ichthyophthirius multifiliis*, *Apiosoma* sp., *Dactylogyrus vastator*, *Gyrodactylus elegans*, *Hirudo* sp., *Argulus foliaceus*, *Lernaea* sp., *Phyllostomum agnotum*, *Eucreadium* sp., *Camallanus ophiocephali* and *Pallisentis* sp. were recorded from the infected fishes. Among all the parasites *G. elegans* was the most dominant parasite and skin had been found as the most vulnerable site for parasitic infestation. The maximum infestation was observed in winter season and the minimum infestation was observed in rainy season.

Key words: *Cirrhina mrigala*, parasite, prevalence, abundance, mean intensity, infestation.

Introduction

Bangladesh is gifted with fisheries resources. The soil, water and climate are very much suitable for aquaculture and fisheries resources management. So, major carp like *C. mrigala* is one of the most commonly cultured indigenous freshwater fish in Bangladesh. It is highly nutritious, delicious and has high market value and its fry and fingerlings are easily available.

Nowadays diseases have become a major problem in fish production. The fish parasites may cause fish mortality in culture fisheries where the entire population of pond may be killed, resulting in loss of potential food and economic loss to the culturists (Sood, 1998).

The success of the implementation of various fishery development programs depends to a great extent on the intensification of the fish parasitological research, as the improvement of fish yield can mainly be achieved from healthy fish stock (Srivastava, 1975). So, proper management would contribute and play supporting role to harness the maximum benefit from fisheries resources.

C. mrigala is a very expensive fish. It is very widely cultured in Bangladesh. The farmers very often face the problems of parasites in it. The present work has been undertaken with a view to knowing the seasonal occurrence of parasites in *C. mrigala* of Rajshahi.

Materials and Methods

Period and methods of sample collection

The investigation was carried out from April 2009 to January 2010. To observe the seasonal infestation, the study period was divided into three remarkable seasons. They were summer (April-June), rainy (July-October) and winter (November-January). Live or freshly dead fishes were collected every week at a regular interval from different fish markets of Rajshahi city. The collected fishes were kept in the shopping bags and transported to the Fisheries Research Laboratory, Department of Zoology, University of Rajshahi.

Laboratory technique

After collection, all the host fishes were examined as early as possible, generally within 12 hours. External parasites from body surface, fin and gill were removed by scrapping the slime on a clean dry glass slide and spread it evenly. After that a cover slip was placed over the materials. The gill arches were removed and macerated under a compound binocular microscope. In case of monogeneans the gills were removed to Petri dishes containing water and gently scrapped to dislodge monogeneans. For endoparasites, fishes were dissected out ventrally by a sharp scalpel to observe parasites inside buccal cavity, stomach and intestine. The whole gut was removed in a watch glass containing normal saline solution and search under microscope for the protozoan and helminth parasites.

Identification of parasites

Ectoparasites and endoparasites were identified on the basis of available taxonomical characters and figures as described by Yamaguti (1963), Kennedy (1975), Kabata (1985), Willhelm Schaperclaus (1991), Hafizuddin and Shahabuddin (1996) and Dr. Kirtunia Juran Chandra (2004) etc.

Results and Discussion

A total of 95 samples were examined from which a total of 72 (75.79%) fishes were found infected. Thirteen species of parasites were identified of which nine were ectoparasites and four were endoparasites. The result is presented in tables-1,2,3 and Fig.1.

Table-1. List of parasites and their site of infestation.

Host fish	Parasites	Site of infestation
<i>C. mrigala</i>	Protozoa : <i>Trichodina pediculatus</i>	Gill
	<i>Chilodonella cyprini</i>	Skin
	<i>Ichthyophthirius multifiliis</i>	Skin, gill and fin
	<i>Apiosoma</i> sp.	Skin and fin
	Monogenea : <i>Dactylogyrus vastator</i>	Gill
	<i>Gyrodactylus elegans</i>	Skin
	Digenea : <i>Phyllodistomum agnotum</i>	Stomach
	<i>Eucreadium</i> sp.	Intestine
	Acanthocephala : <i>Pallisentis</i> sp.	Intestine
	Nematoda : <i>Camallanus ophiocephali</i>	Intestine
	Annelida : <i>Hirudo</i> sp.	Skin, fin and gill
	Crustacea : <i>Argulus foliaceus</i>	Skin and fin
	<i>Lernaea</i> sp.	Gill

Protozoans and monogeneans were very common on the gill, skin and fin of host fishes. Crustaceans were mostly found abundantly attached on the fin and skin. On the other hand digenean flukes and nematodes were recorded

from stomach and intestine. The observation of Chandra (1985) and Farhaduzzaman (2005) were also similar with this result. The present result is also similar with that of Bhuiyan *et al.* (2006).

Table-2. Organ wise distribution of parasites in *C. mrigala*.

Recovered Parasites	Number of parasites in different organs					
	Skin	Fin	Gill	Intestine	Stomach	Total
<i>D. vastator</i>	0	0	76	0	0	76
<i>G. elegans</i>	93	0	0	0	0	93
<i>C. cyprini</i>	24	0	0	0	0	24
<i>Apiosoma</i> sp.	17	29	0	0	0	46
<i>I. multifiliis</i>	24	15	28	0	0	67
<i>Hirudo</i> sp.	08	05	02	0	0	15
<i>T. pediculatus</i>	0	0	35	0	0	35
<i>A. foliaceus</i>	77	52	0	0	0	129
<i>Lernaea</i> sp.	0	0	25	0	0	25
<i>C. ophiocephali</i>	0	0	0	52	0	52
<i>Eucreadium</i> sp.	0	0	0	29	0	29
<i>Pallisentis</i> sp.	0	0	0	37	0	37
<i>P. agnotum</i>	0	0	0	0	80	80
Total	243	101	166	118	80	708

The parasites were mainly found in different organs like skin, fin, gill, intestine and stomachs of the host. A number of 708 parasites of 13 species were collected from these organs.

The highest prevalence, abundance and mean intensity of the parasites were recorded from the

skin. The lowest prevalence, abundance and mean intensity were found at stomach and only one species (*Phyllodistomum agnotum*) was recorded there.

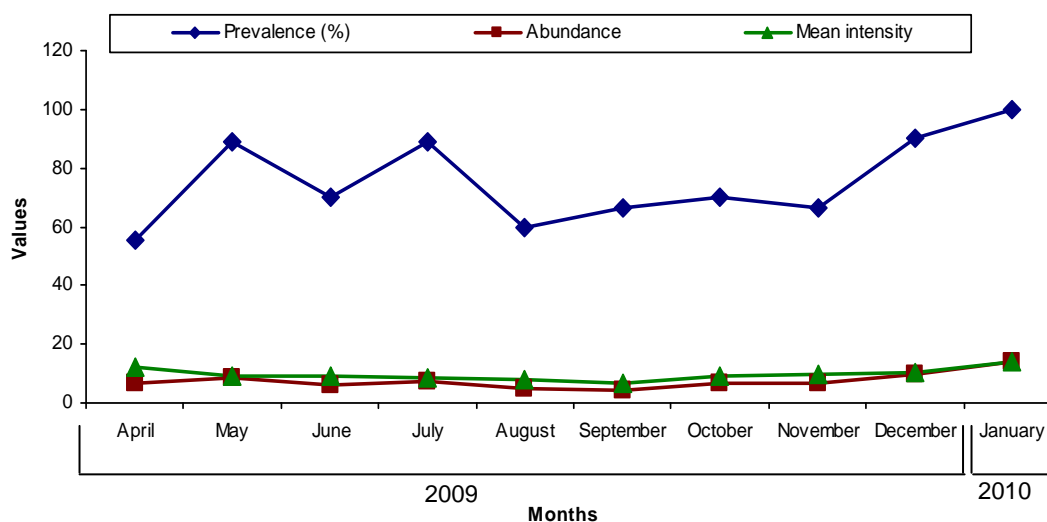


Fig. 1. Monthly prevalence, abundance and mean intensity of parasites of *C. mrigala*.

During the study period the highest (138) parasites were recorded in January and the second highest value (95) was found in December. The lowest value (41) was recorded in September. The highest (100%) prevalence of parasites was recorded in January and the lowest value (55.55%) was recorded in April. The highest abundance value (13.80) was recorded in January and the lowest (4.55) was recorded in September. The highest mean intensity of parasites was observed as 13.80 in January and the lowest as 6.83 in September.

The highest prevalence (92.59%), abundance (10.03) and mean intensity (11.64) were observed in winter. The lowest prevalence (71.05%), abundance (5.74) and mean intensity (8.07) were recorded in rainy season.

So, in general it can be said that the infestation was maximum in winter season and minimum in rainy season. Similar findings were also noticed by Banu *et al.* (1993), Hossain *et al.* (1994), Akhter *et al.* (1997), Chandra *et al.* (1997), Bhuiyan *et al.* (2008) and Hossain *et al.* (2010).

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