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Nematode Parasites of Karbhala Wetland in Silchar Assam

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ABSTRACT : Six hundred and sixty-nine fish belonging to eight different species, from Karbhala wetland in Silchar, Assam were examined for nematode infections. Thirteen nematode species were recovered of which, two species were unidentified. *Monopterus cuchia* (20%) and *Channa orientalis* (20%) showed the highest prevalence percentage. *Colisa fasciatus* showed the highest mean intensity (6.86) and mean abundance (0.92). *Contracaecum* sp. was found to be infected in two fish hosts (*Lepidocephalichthys guntea* and *Mystus bleekeri*). The present communication also attempts to show the relative higher prevalence and mean intensity of the fishes of Karbhala wetland.

Keywords : Nematode, parasites, Karbhala wetland, Assam.

INTRODUCTION

Fish constitutes a major component of diet for the people of North- East India particularly in Assam. Fishing is the main source of employment and income for the people residing in the surrounding village. Kar (1990, 2003, 2005, 2007, 2010) made detailed study of the limnology and ichthyofauna of the water bodies of North- East (NE) India including diseases in fishes. Kar and Sen (2007) studied on the systematic list and distribution of fish biodiversity in Mizoram, Tripura and Barak drainage in North-East India. Kar *et al.* (2008b) studied the Panorama of Fish Biodiversity in certain rivers and wetlands and protected areas in Assam. Binky (2011a) studied on the icthyospecies diversity of Karbhala wetland in Cachar District of Assam.

Various studies have been conducted on intestinal helminth communities of fish. The influence of parasitic infection in relation to the length of fish has been described by many workers (Fagerholm, 1982; Amin, 1986, and Jha and Singha, 1990). Zaman *et al.*, (1986) studied the effect of length (equal age) on the abundance of parasites. Liang-Sheng, (1960) studied on a collection of camallanid nematodes from freshwater fishes in Ceylon. The helminths are found in almost all the animals including fish throughout the world (Bychowsky, 1962). Gambhir et al. (2006) studied on new nematode of the genus *Cosmoxynemoides* from the intestine of *Colisa labiosus* in Manipur. Geetarani *et al.* (2010, 2011) studied on the nematode parasites of Utra Lake in Manipur. Sangeeta et al. (2010, 2011) studied on the nematode parasites of Oinam Lake in Manipur. Shomorendra and Jha (2003) studied on a new nematode parasite *Paraquimperia manipurensis* n. sp. from the intestine of *Anabas testudineus* (Bloch). Study of parasites is scanty and recent in Assam. Attempts have been taken to explore the parasitic fauna of fishes of Assam (Puinyabati, 2010a, 2010b, 2010c, 2010d; Singha, 2010a, 2010b). Binky, (2010, 2011b) worked on the intensity of parasitization among fishes of Karbhala wetland in Cachar District of Assam.

Fish diseases due to nematode parasites is one of the important problem in fish culture and fish farming. The presence of nematode parasites up to a large extent detrimental for a fish population consequently, imposes big losses of fisheries and fishing industry. Since fish play vital role in the economy of Assam, more emphasis should be given on negative interactions that may cause huge damage to the fish population.

MATERIALS AND METHODS

Fishes of different sizes were routinely collected from Karbhala wetland from March 2010 to March 2011. Karbhala wetland (area 0.2345 ha at FSL) lying between 24 0 N and 92 0 42 E and situated 5 km from the Assam University, Silchar is a potential fish habitat for earning their livelihood by the riparian fishermen. The wetland has a maximum depth of 2 m at FSL. Fishes were collected alive almost every alternate day from the fishing sites and brought to the Assam University laboratory. The identification of each fish was done following Jayaram (2010). Small fishes were killed by pithing and somewhat larger specimens by blow on the top of the cranium. The length and weight of the fishes were taken. The external body surfaces as well as the internal body organs were thoroughly examined for the parasites. The internal organs (stomach, intestine, liver and body cavity) after separating were examined individually for parasite in separate petridishes under compound microscope. The stomach and intestine were carefully opened by an incision and then were shaken to dislodge the parasites that might remain attached to the lining of the epithelium by their head ends. The epithelial layers of the stomach and intestine were scrapped with a scalpel to remove any parasite that might remain attached to the layers, and the liver and body cavity were shredded with a pair of forceps and needles. The collected parasites were then

washed in fresh saline solution. The parasites collected, upon being fully relaxed, were fixed in warm 70% alcohol and finally stored in 70% alcohol. An alternative method was also used for killing and stretching, by immersing the worms for 0.5-1 minute in glacial acetic acid following Bylund, 1980). Worms were then preserved in 70% alcohol. The nematodes were transferred from preservative to lactophenol in which their internal organs became very clear and prominent for their identification. Prevalence, mean intensity and abundance indices were calculated according to Bush *et al.* (1997).

RESULTS AND DISCUSSION

A total of 669 fish belonging to eight different species were examined for the presence of nematode parasites. Eleven nematode parasite species were recorded from the fishes examined (Table 1) of which, two species were unidentified. In *Channa punctatus*, a lower prevalence and mean intensity with *Philometra* sp. and unidentified nematode species infection was recorded. On the other hand, *Lepidocephalichthys guntea* and *Mystus bleekeri* shared the infection with *Contracaecum* sp. with relatively low prevalence and mean intensity. Anabas testudineus showed a little higher prevalence percentage (8.82) and mean intensity (1) with four species of nematodes *viz.*, *Zeylanema anabantis*, *Paraquimperia manipurensis*, *Camallanus* sp. and *Paragendria* sp. Similarly, *Clarius batrachus* showed a higher prevalence percentage (11.11%) and mean intensity (6.75) with *Procamallanus* sp., *Rhabdochona* sp. and an unidentified species infection. *Colisa fasciatus* recorded a high prevalence percentage (13.46%) and the highest mean intensity (6.86). In *Monopterus cuchia*, a lower mean intensity (1) and highest prevalence percentage (20%) were found with *Raphidascaris* sp. infection. *Channa orientalis* recorded the highest prevalence percentage (20%) and a low mean intensity (0.4) with *Capillaria* sp. [Table 1].

Table 1: Prevalence, mean intensity and mean abundance of nematode parasites of Karbhala wetland in Silchar, Assam.

Hosts species	*No. examined*	*Parasite species*	*No. infected*	*Prevalence (%)*	*Total no. parasites*	*Mean intensity*
		Philometra sp.				
Channa punctatus	339	Unidentified sp.	5	1.47	7	1.4
Lepidocephalichthys guntea	121	Contracaecum sp.	9	7.43	12	1.33
Mystus bleekeri	24	Contracaecum sp.	1	4.17	1	1
		Paragendria sp.				
Anabas testudineus	34	*Camallanus* sp. Zeylanema anabantis, Paraquimperia manipurensis	3	8.82	3	1
Monoterus cuchia	5	*Raphidascaris* sp.	1	20	1	1
		Procamallanus sp.				
Clarius batrachus	36	*Rhabdochona* sp.	4	11.11	27	6.75
		Unidentified sp.				
Colisa fasciatus	52	*Cosmoxynemoides* sp.	7	13.46	48	6.86
Channa orientalis	5	*Capillaria* sp.	1	20	2	2

The present study showed that different nematode parasite infestation occurs for different fish host which may be due to various environmental factors such as geographical location of the habitat, season of the year, physico-chemical factors of the water, the fauna present in and around the habitat etc. Dogiel (1964) suggested factors that directly influence parasitic fauna of fish include age, diet, abundance of fish, interdependence of members of parasitic fauna within the fish and the season. Nematodes complete their life cycles through intermediate hosts like piscivorous birds (Schmidt, 1990). The need to assess the parasitic infection arises because the fish suffering from parasitic infection or disease result into severe damage to fisheries industry. For successful prevention and elimination of such infections, it is extremely important to achieve early and correct diagnosis of the larval stages of the parasites for which fish constitute the final host.

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