



Helminth infection in *Anabas testudineus* of three wetlands of Goalpara, Assam

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Abstract: *Anabas testudineus* (Bloch) is a popular eatable fresh water fish. The fishes infested with helminthic infection may be died off and the production may be decreased. Besides, the parasites could pass through man and other animals. The occurrence of parasites and their prevalence and intensity in the fish was studied from March, 2012 to February, 2013 in Hasila, Kumri and Urapad wetlands of Goalpara district of Assam. Three trematodes and six nematodes were collected from 309 out of 547 host fish. The trematodes were identified as *Asymphylogora kedarai*, *Brahamputratrema* sp., *Neopodocotyl* sp. and the nematodes were *Camallanus anabantis*, *C. trichuris*, *C. intestinalis*, *Onchocamallanus* sp., *Parascarophis* sp. and *Cosmoxyneumoid nandusi*.

Keywords: *Anabas testudineus*, Goalpara, Hasila, Helminth, Kumri, Urapad

INTRODUCTION

Anabas testudineus is a small fish from Indian water. Being column feeder and larvicidal fish it is used to control mosquito. It is also popular for their lean meat, which contains easily digestible protein and fat of very low melting point and many essential amino acids making them ideal food. So, *Anabas* enjoys a good market demand in Assam as well as in the north-east region. The importance of parasite is related directly to the fish that may affect the general public health (Hoffman, 1967). Parasitic diseases, either alone or in conjunction with other environmental stresses, may influence weight or reproduction of the host, alter its population characteristics and affect its economic importance (Rohde, 1993). Various studies have been conducted on 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; Jha and Singha, 1990; Barber, 2005; Pandey *et al.*, 2012 and Dar *et al.*, 2012). Gambhir *et al.* (2006) studied on new nematode of the genus *Cosmoxyneumoides* 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 *A. testudineus* (Bloch). Though lots of work have been done to study helminth infection of fish in NE India, very little published reports were found by authors relating to this region which made the base for present investigation to find out the helminthic infection in *A. testudineus*.

MATERIALS AND METHODS

547 climbing perch, *Anabas testudineus* were collected from three wetlands viz. Hasila, Kumri and Urapad of Goalpara district, Assam from March 2012 to Feb 2013. Each fish was individually dissected and examined for the presence of parasites separately in body cavity, mesentery, intestine, liver, peritoneal wall, rectum, gills, head and muscle by adopting the methods employed by Mayer and Olsen (1975), Cable (1977), Madhabi *et al.* (2007). Gills were investigated under a stereomicroscope. The liver was cut into small pieces which were firmly pressed between two thick glass plates, and then examined under a compound microscope. The intestine was dissected by needles and the presence of worms was determined by using a stereomicroscope. The head and muscles were chopped and examined for worms. Nematodes were put in hot water for stretching and then fixed in mixture of 70% ethanol and 10% glycerol. Digenean trematodes were fixed in AFA solution (Alcohol-85 ml, formalin-10 ml, acetic acid- 5ml). Lectophenol was used to clear the nematodes and permanent slides were made according to Gibson (1984). Identification was carried out by morphological examination, as described by Chabaud (1947), Yamaguti (1958) and Chubb (1980, 1982) and Soota (1983). The prevalence, mean Intensity and abundance or relative density were calculated as per Margolis *et al.* (1982).

RESULTS AND DISCUSSION

Out of 547 climbing perch collected from three wetlands of Goalpara district, 309 were infected by 09 species of helminths with an overall prevalence 56.49%. Out of 309 infected fishes, 780 helminth

parasites were recovered with mean intensity 2.52 and abundance 1.43 (Table 1). The species with the highest prevalence was in *Camallanus anabantis* (18.6%), while *Asymphylogora kedarai*, *Neopodocotyl sp*, *C. trichuris*, *C. intestinalis*, *Cosmoxynemoid nandusi*, *Onchocamallanus sp*, *Brahamputratrema sp* showed 16.5, 12.8, 12.4, 9.1, 4.2, 3.8 and 2.7% prevalence respectively. The species with the lowest prevalence was in *Parascarophis sp* (1.8%) as shown in Table 2. The result revealed that *C. intestinalis* showed the highest mean intensity (0.62) at Hasila wetland, while in contrast, *Brahamputratrema sp* showed the lowest (nil) at Kumri and Urapad wetlands. In this study, it was found that helminth parasites were specific to their habitats since *Brahamputratrema sp* was collected only from the fish at Hasila wetland. *Parascarophis sp* and *Onchocamallanus sp* were not found in fish at Kumri and Urapad wetlands. The findings agree with previous report on the relationship between geoclimatic factors of habitat and prevalence and intensity of the helminthic infection in freshwater fish (Akinsanya *et al.*, 2006). Prevalence of helminthic infestation was found to be higher (58.89%) in Kumri wetland (Beel) which is a perennial one than in Hasila (54.39) and Urapad (56.22) which are biannual wetlands. Sarma (2012) also found the same result where he took 2 perennial and biannual wetlands and 1 artificially controlled pond as his study area. Examination of the occurrence of helminths in separate organs revealed that the highest infesting organ of helminths was intestine with 80% infection followed by the

infection in body cavity, peritoneal wall, rectum with 76.9%, 62%, 58.5% respectively and in liver, infestation rate was the lowest with just 2%. (Fig.1). Comparing to the results of earlier worker it can be established that environment and habitat play an important role on helminth parasites for infesting specific organ in host body. Luangphai *et al.* (2004) recorded the highest infestation in muscle and head and the lowest in intestine of *A. testudineus*, whereas in this study, intestine showed the highest infestation rate (80%) conformity with Khanam *et al.* (2011) observed the maximum helminths infestation in the intestine of *Macrogathus aculeatus*. Binky *et al.* (2011) recorded only three helminth species with an overall prevalence and mean intensity of 8.82% and 0.1% respectively in *A. testudineus* from Silchar, Assam. In contrast, in present study, 09 helminth species with 56.5% prevalence and 2.5 mean intensity have been recorded in the same species from Goalpara. Further investigation on this unexplored area on other host will give new light in helminth diversity as well as their infestation level on host.

Table 1. Infection level of helminths from three habitats.

Habitat	FE	FI	NP	P%	MI	A
Hasila	182	99	273	54.39	2.76	1.5
Kumri	180	106	277	58.89	2.61	1.54
Urapad	185	104	230	56.22	2.21	1.24
Total	547	309	780	56.49	2.52	1.43

(FE)=Fish examined, (FI) = Fish infected, (NP) = No. of parasite, (P) = Prevalence, (MI) = Mean intensity, (A) = Abundance

Table 2. Prevalence and mean intensity of helminth species in three wetland habitats.

Helminth species	Prevalence (%)	Total no. of helminths (Mean intensity)		
		Hasila wetland	Kumri wetland	Urapad wetland
<i>Asymphylogora kedarai</i>	16.5	36 (0.36)	38 (0.35)	56 (0.54)
<i>Brahamputratrema sp</i>	2.7	24 (0.24)	00 (00)	00 (00)
<i>Neopodocotyl sp</i>	12.8	27 (0.27)	50 (0.47)	48 (0.46)
<i>Camallanus intestinalis</i>	9.1	61 (0.62)	27 (0.25)	20 (0.19)
<i>Camallanus trichuris</i>	12.4	27 (0.27)	56 (0.53)	43 (0.41)
<i>Camallanus anabantis</i>	18.6	46 (0.46)	57 (0.54)	40 (0.38)
<i>Onchocamallanus sp</i>	3.8	30 (0.3)	20 (0.19)	00 (00)
<i>Parascarophis sp</i>	1.8	09 (0.09)	00 (00)	06 (0.06)
<i>Cosmoxynemoid nandusi</i>	4.2	13 (0.13)	29 (0.27)	17 (0.16)

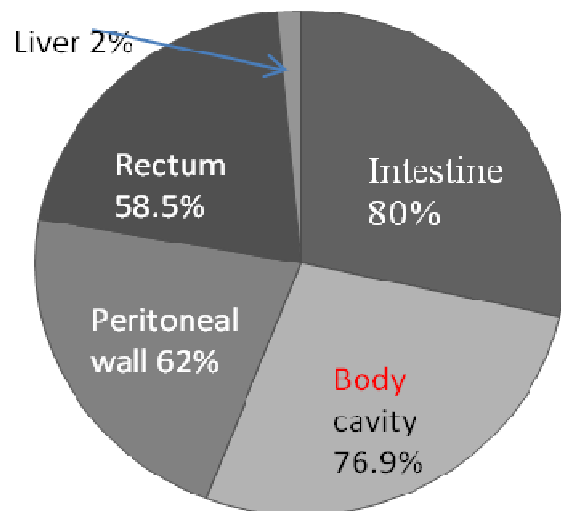


Fig.1. Percentage of helminths infestation in different organs of the fish.

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