

Studies on nematode parasites of fishes of Oinam lake Bishnupur district, Manipur, India

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Abstract: An extensive survey was done for fish nematode parasites of few economically important fishes of Oinam Lake, Bishnupur district, Manipur. 9 species of nematodes were encountered. They are *Camallanus anabantis*, *Procamallanus (Procamallanus) saccobranchi*, *Paraquimperia manipurensis*, *Paragendria* sp., juvenile stages of genus *Syphacia*, *Haplonema*, *Spinitectus*, *Philometra* and *Parascarophis* etc. Of these nematode species, *Procamallanus (Procamallanus) saccobranchi*, *Paragendria* sp and *Haplonema* sp. showed maximum abundance (14.28%) and *Paraquimperia manipurensis*, *Parascarophis* sp. showed minimum abundance (4.76%) of parasites. Among the fish species *Anabas testudineus* had highest percentage (50%) of parasites and *Puntius sophore* and *Colisa labiosus* had lowest percentage (1.25%) of parasites.

Keywords: Nematode parasites, Fishes, Oinam lake, Manipur

INTRODUCTION

Fish is a vital source of human food particularly in terms of high quality proteins. For the people of Eastern India in general, and North East in particular, fish constitutes a major component of diet. Being a cheap source of animal protein, there is more emphasis on the culture of fishes in recent times. With increasing demand, pisciculture has been a lucrative avocation. But the pisciculturist face many hazards. One among such hazards is the disease resulting from parasitic infections. Manipur has vast potential resources of fisheries in ponds, lakes, rivers and swamps. About 1/3rd of the total area of central valley of Manipur is occupied by waterbodies. Fish productivity is adversely affected by parasitic infection and diseases. Fishes harbour a variety of parasites belonging to diverse animal groups. The nematode parasites of a particular water body depend on biotic and abiotic variables and on the presence of intermediate hosts. Their exists relationship between the distribution of nematode and mode of life of their hosts. Fluctuation of nematode infection used to vary during the year and information of such fluctuation has been reported in the case of nematode parasites by a number of seasonal changes of water temperature.

Work of Yamaguti (1958, 1959, 1961, 1962 and 1963) related to occurrence of helminth parasites in vertebrate host is of immense importance. Further Chubb (1979) illustrated the studies of seasonal occurrence of helminths in fresh

water fishes in different climate zones of the world. Kar (2007) and Kar and Sen (2007) Studied on systematics list and distribution of fish biodiversity in Mizoram, Tripura and Barak drainage in North East India. Kar *et al.*(2008) studied on the panorama of fish diversity in certain rivers, wetlands and protected areas in Assam. Kar and Barbhuiya (2009) studied on the Mahseer fishes of Barak Drainage, Mizoram and Tripura. Barbhuiya *et al.* (2009) worked on fish biodiversity in certain rivers of Tripura. Shomorendra and Jha (2003) reported on a new nematode parasite *Paraquimperia manipurensis* n.sp. from the intestine of *Anabas testudineus*. The present study deals with a systematic summary and abundance of nematode parasites from Oinam Lake, Manipur.

MATERIALS AND METHODS

Study area: Oinam Lake is a shallow and very old semi-terrestrial freshwater lake having an area of about 0.71km². It is situated at Oinam village in the Bishnupur district of Manipur and is located at about 21km on the South-Western side of Imphal city. It is located in the intersection of 24°25' -24°40' N latitude and 93°45' -93°55' longitude and is located about 783m MSL. It has a maximum depth of 0.82m. It contains about 35 species of fishes belonging to major families like Notopteridae, Cyprinidae, Bagridae, Siluridae, Channidae and Anabantidae.

Collection of fish: The fishes were collected alive almost every alternate day from the Oinam Lake and brought to the laboratory in the polythene bags containing water of

Table 1. Total number and % abundance of nematodes in few fishes of Oinam lake region.

S. No	Name of nematodes	Fish examined														Number of nematodes found	% abundance
		A	B	C	D	E	F	G	H	I	J	K	L	M	N		
1	<i>Camallanus anabantis</i> (Pearse 1933)	+	-	-	-	-	+	-	-	-	-	-	-	-	-	3	9.52%
2	<i>Procamallanus (Procamallanus) saccobranchi</i> (Karve 1952)	-	-	-	-	-	-	-	-	-	-	+	-	-	-	2	14.28%
3	<i>Paraquiperia manipurensis</i> (Shomendra & Jha 2003)	+	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4.76%
4	<i>Paragengria</i> sp. (Baylis 1939)	-	-	+	-	-	-	+	-	-	-	-	-	-	-	3	14.28%
5	<i>Philometra</i> sp.	-	-	-	-	-	-	-	-	-	-	-	+	-	-	1	9.52%
6	<i>Spintectus</i> sp.	-	-	-	-	-	-	+	-	-	-	+	-	-	2	14.28%	
7	<i>Syphacia</i> sp.	-	-	-	-	-	-	-	+	-	-	-	-	-	2	9.52%	
8	<i>Haplonema</i> sp.	-	-	-	-	-	-	-	-	-	+	-	-	-	1	14.28%	
9	<i>Parascarophilis</i> sp.	-	-	-	-	-	-	-	-	-	-	-	+	-	1	4.76%	
Grand total:																16	

Abvr- A: *Anabas testudineus* (Bloch), B: *Notopterus notopterus* (Pallas), C: *Puntius sophore* (Ham), D: *Lepidocephalichthys guntea* (Ham), E: *Lepidocephalichthys berdmorei* (Blyth), F: *Channa punctatus* (Bloch), G: *Channa striatus* (Bloch), H: *Channa gachua* (Ham), I: *Colisa fasciatus* (Schnieder), J: *Colisa labiosus* (Hamilton Buchanan), K: *Mystus bleekeri* (Day), L: *Heteropneustes fossilis* (Bloch), M: *Clarias batrachus* (Linnaeus), N: *Glossogobius giuris* (Hamilton Buchanan). “+”= Present and “-”= Absent

Table 2. Number of the fishes infected and the % abundance of nematode infection in the Oinam Lake region..

S.No.	Name of fish	No. of fish examined	No. of fish infected (a)	Name of nematodes	% abundance
1	<i>Anabas testudineus</i> (Bloch)	94	40	<i>Camallanus anabantis</i> <i>Paraquimperia manipurensis</i>	50%
2	<i>Notopterus notopterus</i> (Pallas)	15	-	-	-
3	<i>Puntius sophore</i> (Ham)	20	1	<i>Paragendria</i> sp.	1.25%
4	<i>Lepidocephalichthys guntea</i> (Ham)	15	-	-	-
5	<i>Lepidocephalichthys berdmorei</i> (Blyth)	15	-	-	-
6	<i>Channa punctatus</i> (Bloch)	21	5	<i>Camallanus anabantis</i>	6.25%
7	<i>Channa striatus</i> (Bloch)	50	3	<i>Spinitectus</i> sp.	3.75%
8	<i>Channa gachua</i> (Ham)	8	4	<i>Camallanus anabantis</i> <i>Paragendria</i> sp.	5%
9	<i>Colisa fasciatus</i> (Schnieder)	34	2	<i>Syphacia</i> sp.	2.5%
10	<i>Colisa labiosus</i> (Hamilton Buchanan)	5	1	<i>Syphacia</i> sp.	1.25%
11	<i>Mystus bleekeri</i> (Day)	45	8	<i>Paragengria</i> sp. <i>Haplonema</i> sp.	10%
12	<i>Hetropneutes fossilis</i> (Bloch)	20	6	<i>Procamallanus</i> (<i>Procamallanus</i>) <i>saccobranchi</i> , <i>Spinitectus</i> sp.	7.5%
13	<i>Clarias batrachus</i> (Linnaeus)	20	10	<i>Procamallanus</i> (<i>Procamallanus</i>) <i>saccobranchi</i> , <i>Philometra</i> sp. <i>Parascarophis</i> sp.	12.5%
14	<i>Glossogobius giuris</i> (Hamilton Buchanan)	20	-	-	-

Total no. of host examined- 382; Total no. of host infected-80

the same locality. Small fishes were killed by pithing and somewhat larger specimens by blow on the top of cranium. The external body surface as well as the internal body eg. alimentary canal, liver, heart, kidney, gonads, swim bladder etc were thoroughly examined for the occurrence of parasites. The living worms were placed directly in warm 70% alcohol for fixation. An alternate methods was used for killing and stretching by immersing the worms for 0.5-1 minutes in glacial acetic acid (Berland 1961), then preserved in 70% alcohol. Further the nematodes were cleared in Lactophenol and mounted in glycerine jelly.

RESULTS AND DISCUSSION

The parasites collected from 14 species of fish hosts examined belonged to 9 diverse groups viz: *C. anabantis*, *P. (Procamallanus) saccobranchi*, *P. manipurensis*, *Paragendra* sp., juvenile stages of genus *Syphacia*, *Haplonema*, *Spinitectus*, *Philometra* and *Parascarophis* etc. Table. 1 shows the total number and % abundance of nematodes in few fishes of Oinam Lake region. Among these species *C. anabantis* (Pearse, 1933) had 9.52%, *P. (Procamallanus) saccobranchi* has 14.28%, *P. manipurensis* (Shomorendra and Jha, 2003) had 4.76%, *Paragendria* sp. (Baylis, 1939) had 14.28%, *Philometra*

sp. had 9.52%, *Spinitectus* sp. had 14.28%, *Syphacia* sp. had 9.52%, *Haplonema* sp. had 14.28% and *Parascarophis* sp. had 4.76%. Of these species *P. (Procamallanus) saccobranchi*, *Paragendria* sp. and *Haplonema* sp. had highest percentage of parasites and *Paragendria* and *Parascarophis* had lowest percentage of parasites.

Table 2 shows the number of the fishes infected and the % abundance of nematode infection in the Oinam Lake region. The percentage of infection in *A. testudineus* (Bloch) had 50%, *P. sophore* (Ham) has 1.25%, *Channa punctatus* (Bloch) has 6.25%, *C. striatus* (Bloch) has 3.75%, *C. gachua* (Ham) had 5%, *C. labiosus* (Hamilton Buchanan) has 1.25%, *M. bleekeri* (Day) has 10%, *H. fossilis* (Bloch) has 7.5%, *C. batrachus* (Linnaeus) has 12.5%. Thus, *A. testudineus* was found to have the highest percentage of parasites (50%), while had lowest percentages of infection *P. sophore* (1.25%) and *C. labiosus* (1.25%).

ACKNOWLEDGEMENTS

The authors are thankful to the Director, ZSI, Kolkata; authorities of Assam University and Thambal Marik College, Oinam for giving laboratory facilities. Thanks are due to Shri S. R. Dey Sarkar of ZSI, identifying the

specimens and to UGC, New Delhi for granting a major research project to the second author.

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