

Nematode Parasites of Fishes of Oinam Lake, Manipur, India

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Abstract

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

Key words : Fishes, Nematode parasites, Oinam lake, Manipur.

In the course of routine examination of fishes of Oinam lake, Manipur for parasitic infections, a few species of nematodes were collected. 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 (NE) India 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 demands, the pisciculturists have also been facing 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 the central valley of Manipur is occupied by water bodies. Fish productivity is adversely affected by parasitic infections and diseases. Fishes harbor a variety of parasites belonging to diverse animal groups. The nematode parasites of a particular water body depend on biotic and abiotic variables and also on the presence of intermediate hosts. There exists relationship between the distribution of nematodes 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

nematode parasites by a number of seasonal changes of water temperature. The infection level of intermediate host and their incidence are factors of certain importance for such fluctuation. Oinam Lake is one of the largest freshwater lakes in north-eastern (NE) India. It is located in the Bishnupur District in Manipur state and its area is about 100 hectares (ha). A rich diversity of 50 species of fishes have been recorded in the lake, notably *Anabas testudineus*, *Puntius sophore*, *Channa gachua*, *Glossogobius giuris*, *Colisa labiosus*, *Clarias batrachus*, *Channa punctatus*, *Lepidocephalichthys guntea*, *Mystus bleekeri*, *Hetrogneutes fossilis*. Work of Yamaguti (1) related to the occurrence of nematode parasites in vertebrate host is of immense importance. Baylis (2) studied nematodes in some areas of the world. Bilquees et al. (3) studied on marine nematodes of West Pakistan. Work of Chabaud (4) related to the occurrence of nematodes in England. Geetarani et al. (5) studied on the effect of length of fish on the occurrence of nematode and acanthocephalan parasites. Jayaram (6) studied the freshwater fishes of the Indian region. Jha et al. (7) studied on the characterization of parasite - fauna of the fishes of Muzaffarpur, Bihar. Jhingran (8) published the Fish and fisheries of In-

Table 1. Total number of parasites found and their abundance (percentage). + = Present, - = Absent. A : *Anabas testudineus*, B : *Notopterus notopterus*, C : *Puntius sophore*, D : *Lepidocephalicthyes guntea*, E : *Lepidocephalicthyes berdmorie*, F : *Channa punctatus*, G : *Channa striatus*, H : *Channa gachua*, I : *Colisa fasciatus*, J : *Colisa labiosus*, K : *Mystus bleekeri*, L : *Hetropneutes fossilis*, M : *Clarias batrachus*, N : *Glossogobius giuris*.

Name of parasites	Name of fish host examined														Total no. of parasites found	Abundance (%)
	A	B	C	D	E	F	G	H	I	J	K	L	M	N		
1 <i>Camallanus anabantis</i>	+	-	-	-	-	+	-	-	-	-	-	-	-	-	2	9.52
2 <i>Procamallanus (Procamallanus) saccobranchi</i>	-	-	-	-	-	-	-	-	-	-	+	+	+	-	3	14.28
3 <i>Paraquimperia manipurensis</i>	+	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4.76
4 <i>Paragendria</i> sp.	-	-	+	-	-	-	-	+	-	-	+	-	-	-	3	14.28
5 <i>Philometra</i> sp.	-	-	-	-	-	-	-	-	-	-	+	-	+	-	2	9.52
6 <i>Spinitectus</i> sp.	-	-	-	-	-	-	+	+	-	-	+	-	-	-	3	14.28
7 <i>Syphacia</i> sp.	-	-	-	-	-	-	-	-	+	+	-	-	-	-	2	9.52
8 <i>Haplonema</i> sp.	-	-	-	-	-	-	-	-	+	-	+	-	+	-	3	14.28
9 <i>Chabaudus</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	1	4.76
10 <i>Paracarophis</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	+	-	1	4.76
Grand total-21																

dia. Kar and Dey (9) reported on account of Ichtyospecies of Lake Sone in Barak valley of Assam. Puinyabati et al. (10) studied the helminth parasites of fishes of Awangsoi lake in Bishnupur, Manipur, India. Sangeeta et al. (11) studied on nematode parasites of fishes of Oinam Lake, Bishnupur district,

Manipur. Kar and Sen (12) studied on systematic list and distribution of fish biodiversity in Mizoram, Tripura and Barak drainage in North East India. Kar et al. (13) studied on Panorama of fish biodiversity in certain rivers and in Manipur. Yashmin et al. (14) studied the panorama of fish catching devices in

Table 2. Total number of hosts infected and their percentage.

Name of the Fish	No. of hosts examined	No. of hosts infected	Name of parasites found	Abundance (%)
1 <i>Anabas testudineus</i>	94	40	<i>Camallanus anabantis</i> <i>Paraquimperia manipurensis</i>	50
2 <i>Notopterus notopterus</i>	15	-	-	-
3 <i>Puntius sophore</i>	20	1	<i>Paragendria</i> sp.	1.25
4 <i>Lepidocephalicthyes guntea</i>	15	-	-	-
5 <i>Lepidocephalicthyes berdmorie</i>	15	-	-	-
6 <i>Channa punctatus</i>	21	5	<i>Camallanus anabantis</i>	6.25
7 <i>Channa striatus</i>	50	3	<i>Spinitectus</i> sp.	3.75
8 <i>Channa gachua</i>	8	4	<i>Camallanus anabantis</i> <i>Paragengria</i> sp.	5
9 <i>Colisa fasciatus</i>	34	2	<i>Chabaudus</i> sp.	2.5
10 <i>Colisa labiosus</i>	5	1	<i>Syphacia</i> sp.	1.25
11 <i>Mystus bleekeri</i>	45	8	<i>Procamallanus (Procamallanus) saccobranchi</i> , <i>Paragendria</i> ., <i>Haplonema</i> sp., <i>Philometra</i> sp.	10

Table 2. Continued.

Name of the Fish	No. of hosts examined	No. of hosts infected	Name of parasites found	Abundance (%)
12 <i>Heteropneutes fossilis</i>	20	6	<i>Procamallanus (Procamallanus) saccobranchi</i> , <i>Spinitectus</i> sp.	7.5
13 <i>Clarias batrachus</i>	20	10	<i>Procamallanus (Procamallanus) saccobranchi</i> , <i>Philometra</i> sp., <i>Haplonema</i> sp., <i>Chabaudus</i> sp., <i>Paracarophis</i> sp.	12.5
14 <i>Glossogobius giuris</i>	20	—	—	—
	Total no. of host examined 382	Total no. of host infected 80		

Manipur State of India. Kar and Dey (15) worked on the ecology of aquatic macrophytes of Chatla Haor. Shomorendra et al. (16) studied on the new nematode parasites of fishes from Manipur. Kar (17) made detailed study of the Ichthyofauna of North East (NE) India including diseases in fishes. Kar et al. (18) studied on the Mahseer fishes of Barak drainage, Mizoram and Tripura.

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Methods

The fishes were collected alive almost every alternate day from the fishing sites and brought to the laboratory in the polythene bags containing water of the same locality. Small fishes were killed by pithing and somewhat larger specimens by blow on the top of cranium. The external body surface and the internal organization e.g. alimentary canal, liver, heart, kidney, gonads, swim bladder were thoroughly examined for the occurrence of parasites. The living worms were placed directly in warm 70% alcohol. An alternate methods was also used for killing and stretching by immersing the worms for 0.5—1 minute in glacial acetic acid (Berland, 1961), then preserved in 70% alcohol. Further, the worms were cleared in

Lactophenol and mounted in glycerine jelly.

Results and Discussion

The parasites have been collected from 14 fish species and were examined. They were *Camallanus anabantis*, *Procamallanus (Procamallanus) saccobranchi*, *Paraquimperia manipurensis*, *Paragendria* sp., juvenile stages of genus *Syphacia*, *Haplonema*, *Chabaudus*, *Spinitectus*, *Philometra* and *Paracarophis*. Among these species, *Camallanus anabantis* (Pearse 1933) showed 9.52% abundance, *Procamallanus (Procamallanus) saccobranchi* showed 14.28%, *Paraquimperia manipurensis* (16) showed 4.76%, *Paragendria* sp. showed 14.28% (2), *Philometra* sp. showed 9.52%, *Spinitectus* sp. showed 14.28%, *Syphacia* sp. showed 9.52%, *Haplonema* sp. showed 14.28%, *Chabaudus* sp. showed 4.76% and *Paracarophis* sp. showed 4.76% abundance. Of these species, *Procamallanus (Procamallanus) saccobranchi*, *Paragendria* sp. and *Haplonema* sp. had highest percentage of abundance and *Paragendria*, *Chabaudus* and *Paracarophis* had lowest percentage of abundance (Table 1).

Some fishes are not identified by parasites, but some are highly infected. Percentage of infection in *Anabas testudineus* was 50%, *Puntius sophore* was 1.25%, *Channa punctatus* was 6.25%, *Channa striatus* was 3.75%, *Channa gachua* was 5%, *Colisa labiosus* was 1.25%, *Mystus bleekeri* was 10%,

Heteropneustes fossilis was 7.5%, *Clarius batrachus* was 12.5%. *Anabas testudineus* was found to harbour the highest percentage of parasites 50%, and *Puntius sophore* 1.25% and *Colisa labiosus* 1.25% was found to harbour the lowest percentage of parasites. It is concluded that these nematode parasites may be capable of inducing mortality in fish (Table 2).

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