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Parasites in Wetland and Stream Fishes of Irongmara in Cachar, Assam

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Abstract

The importance of fish parasites is related directly to the importance of the fish they may affect. Diseases caused by parasitic infections are limiting factors in aquaculture production. Systematic survey of the parasite fauna infecting the wetland and stream fishes of the Irongmara, Silchar was done. Prevalence of infection and intensity of infection of parasites were calculated. Result showed that cestodes had the highest prevalence of infection (17.64%) and highest intensity of infection (2.33). *Acanthocephalus* sp. showed the minimum percentage of infection (5.88%).

Key words : Parasites, Fishes, Wetlands, Streams, Irongmara.

Human communities depend on freshwater biodiversity for a variety of resources. Among the organisms, most attention has been focused on fish as protein rich food of their overwhelming economic importance. The importance of fish parasites is related directly to the importance of the fish they may affect. There is a bewildering array of fish parasites and probably all the fish species harbor one or more parasite species. Diseases caused by parasitic infections are limiting factors in aquaculture production. Parasite can weaken a fish by destroying tissue, removing blood, cellular fluids, diverting part of its nutrient supply and allowing secondary infection to develop. The present study was aimed to identify the fish parasites found in the wetland and stream of Irongmara, Silchar, Assam. Irongmara, a small village of Cachar district of Assam 24 km away from Silchar town. Here the principal sources of fishes are mainly some local streams and wetlands. Van Cleave (1953) worked on acanthocephalan of North American Mammals. Amin and Burrows (1977) studied on acanthocephalan of Lake Michigan. Many Indian workers made substantial contribution to the taxonomy of digenetic trematode parasites (1, 2). Fish nematodes of Indian region have been studied by several workers. Work of Yamaguti (3—6) related to occurrence of helminth parasites in vertebrate host is of immense importance. Chubb (7, 8) studied seasonal occurrence of helminthes in freshwater fishes in different climate zones of the world. Kar et al. (9) studied Ichthyodiversity of Chatla Haor, a floodplain wetland in Barak valley region of Assam. Kar and

Table 1. Physico-chemical characteristics of water sample collected from Balichuri stream.

	Parameter	Value	Optimum value for fish health
1	pH	6.47	6—9 best for growth
2	Temperature (c)	23	20—38 C is acceptable
3	Dissolved oxygen (mg/l)	4.5	5 mg/l is acceptable
4	FCO_2 (mg/l)	10	Surface water contain <10 mg/l
5	Conductivity (μ mho)	38	50—150 μ mho is acceptable
6	Alkalinity (mg/l)	13	20—200 ppm is acceptable range for most fishes

Table 2. Physico-chemical characteristics of water sample collected from local wetland.

	Parameter	Value	Optimum value for fish health
1	pH	6.65	6—9 best for growth
2	Temperature (c)	25	20—38 is acceptable
3	Dissolved oxygen (mg/l)	4.2	5 mg/l is acceptable
4	FCO_2 (mg/l)	9	Surface water contain < 10 mg/l
5	Conductivity (μ mho)	42	50—100 μ mho is acceptable
6	Alkalinity (mg/l)	18	20—200 mg/l acceptable range for most fishes

Table 3. Host parasite list and prevalence of infection of collected fishes.

Fish host	Parasite	No. of fish examined	No. of fish infected	No. of Parasite Parasite	Percent of infection
Anabas testudineus	—	8	—	—	—
Channa punctatus	—	17	—	—	—
Channa orientalis	*Pallisentis ophiocephali*	13	1	1	7.69
Colisa fasciatus	*Syphacia* sp.	19	2	3	10.52
Clarias batrachus	—	4	—	—	—
Heteropneustes fossilis	Unidentified Cestode	17	3	7	17.64
Mystus tengara	—	11	—	—	—
Amblypharyngodon mola	—	7	—	—	—
Lepidocephalus guntea	*Geozia* sp. Zeder 1800	16	2	3	12.5
Puntius ticto	*Acanthocephalus* sp.	17	1	2	5.88
Puntius sophor	Unidentified Acanthocephala	9	1	1	11.11
Macrognathus aral	—	5	—	—	—
Xenotodon cancilla	—	2	—	—	—
Notopterus notopterus	—	3	—	—	—

Barbhuiya (10) worked on the ecology of aquatic macrophytes of Chatla Haor. Kar (11) made detailed study of the limnology and ichthyofauna of the water bodies of north-east (NE) India including diseases in fishes. Jha (12) studied on characterization of parasite fauna of the fishes of Muzzaffarpur, Bihar. Kar and Sen (13) studied the systematic list and distribution of fish biodiversity in Mizoram, Tripura and Barak drainage in North East India. Shomorendra and Jha (14) studied the occurrence of parasites of the fishes in Loktak Lake, Manipur.

Methods

Fishes are sampled from the water body by using various fishing gears at regular intervals. The fishes are carried in a polythene bags having water of the same place to the laboratory. They were identified by following standard literature (11, 13, 15, 16). Then the fishes were subjected to macroscopic and microscopic examination. Length and weight of the fishes were recorded. Estimation of physico-chemical factors (pH, temperature, DO, phosphate, nitrate, TA, conductivity, free CO_2) of the water sample were analyzed. External (scales, gills) and internal (liver, intestine) body organs are thoroughly examined for parasites. Collected parasites were preserved in respective recommended fixatives. To facilitate identification of the worms, trematodes and cestodes were dehydrated, stained in alum carmine, cleared in methyl salicylate and mounted in Canada balsam while for nematode and acanthocephala the worms were cleared in lacto-phenol and mounted in glycerin gelly. Parasites were identified following standard literature (3—6).

Results and Discussion

Physico-chemical characteristics of water of the fish habitat are presented in Tables 1 and 2.

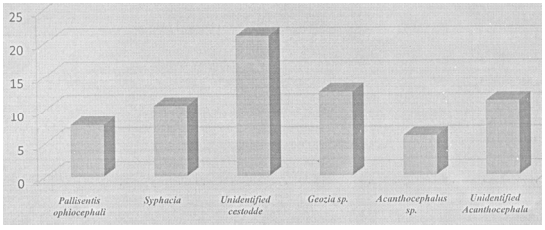

Figure 1. Percentage of occurrence of different helminthes found.

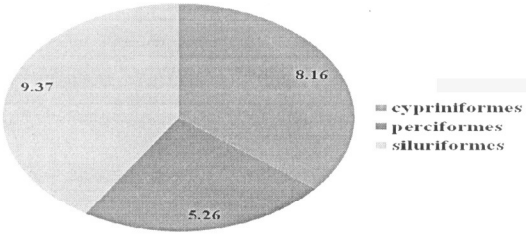

Figure 2. Prevalence of infection in different orders.

Table 4. Intensity of infection of parasites in fishes of Irongmara fish market.

Fish species	Parasite group	Site of infection	Intensity of infection
C. orientalis	Acanthocephala	Intestine	1
Colisa fasciatus	Nematode	Intestine	1.5
Heteropneustes fossilis	Cestode	,,	2.33
Lepidocephalus guntea	Nematode	,,	1.5
Puntius ticto	Acanthocephala	,,	2.00
Puntius sophor	,,	,,	1

Total number of fish examined is 148 of which total number of fish infected found is 10 (Table 3). The fishes from Irongmara fish market is mainly infected with helminth parasites (Table 4). Overall percentage of infection as 6.75%. Cestodes had the highest prevalence of infection (17.64%) and highest intensity of infection (2.33%) (Figs. 1 and 2) *Acanthocephalus* sp. showed the minimum percentage of infection (5.88%). *Clarias batrachus, Channa punctatus, Anabas testudineus, Mystus tengara, Amblypharyngodon mola, Macrognathus aral, Notopterus notopterus, Xenotodon cancilla* did not show any parasitic infection.

It can thus be suggested that the species and feed activity of host fish and the life cycle of parasites and location of the lake play role in parasitic diversity. Also the choice and composition of the food is important for the diversity of the helminth fauna in fishes.

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