Nematode Parasites of Karbhala Wetland in Silchar Assam

Khaidem Binky*, M. Shomorendra** and Devashish Kar*

*Division of wetlands, Fishery Science and Aquaculture, Department of Life Science, Assam (Central) University, Silchar, (Assam)
**Fish Disease Research Lab., Department of Zoology, Thambal Marik College, Oinam, (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 gundea 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 ichtyospecies 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 Singh, 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 (Puinayabati, 2010a, 2010b, 2010c, 2010d; Singh, 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 (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>
<thead>
<tr>
<th>Hosts species</th>
<th>No. examined</th>
<th>Parasite species</th>
<th>No. infected</th>
<th>Prevalence (%)</th>
<th>Total no. parasites</th>
<th>Mean intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channa punctatus</td>
<td>339</td>
<td>Philometra sp.</td>
<td>5</td>
<td>1.47</td>
<td>7</td>
<td>1.4</td>
</tr>
<tr>
<td>Lepidocephalichthys</td>
<td>121</td>
<td>Unidentified sp.</td>
<td>9</td>
<td>7.43</td>
<td>12</td>
<td>1.33</td>
</tr>
<tr>
<td>Mystus bleekeri</td>
<td>24</td>
<td>Contracaecum sp.</td>
<td>1</td>
<td>4.17</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Anabas testudineus</td>
<td>34</td>
<td>Contracaecum sp.</td>
<td>1</td>
<td>4.17</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Monoterus cuchia</td>
<td>5</td>
<td>Unidentified sp.</td>
<td>1</td>
<td>20</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Clarus batrachus</td>
<td>36</td>
<td>Rhabdochona sp.</td>
<td>4</td>
<td>11.11</td>
<td>27</td>
<td>6.75</td>
</tr>
<tr>
<td>Colisa fasciatus</td>
<td>52</td>
<td>Unidentified sp.</td>
<td>7</td>
<td>13.46</td>
<td>48</td>
<td>6.86</td>
</tr>
<tr>
<td>Channa orientalis</td>
<td>5</td>
<td>Cosmoxynemoides</td>
<td>1</td>
<td>20</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

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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REFERENCES


