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COMPARISON OF HELMINTH INFECTION BETWEEN THE SEXES OF *CLARIAS BATRACHUS* (LINN.) FROM RUPANDEHI, NEPAL

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Abstract

One hundred and twenty specimens of catfish *Clarias batrachus* were examined for parasites. They comprise sixty specimens each of males and females. 25(41.67%) males and 25(41.67%) females showed parasitic infection. A total of seventy six intestinal helminthes belonging to three taxonomic groups were recovered. They are cestodes – *Lytocestus indicus*, *Pseudocaryophyllaeus clariae*; nematodes – *Paracmallanus* sp., *Procamallanus cancelus* and acanthocephalan – *Acanthocentis* sp. Of these, twenty nine were recovered from males and forty seven from females. Total prevalence of infection was the same for both sexes but total intensity of infection was different. There was no statically significant difference in the infection between the two sexes.

Key words: *Clarias batrachus*, helminth parasites, Rupandehi.

Introduction

Clarias batrachus (Linnaeus, 1758) Family, Clariidae inhabits swamps, rivers, and ponds and feeds on insect larvae, crustaceans, worms, fish and debris. It breeds during monsoon in confined water and reported to lay eggs in holes made in the pond bank. This species has been bred successfully by giving pituitary injection. The fish having a wide geographical spread, a high growth rate, resistant to handling stress and well appreciated (Akinsanya and Otubanjo, 2006). It is highly priced and requested for by farmers and consumers. It is considered to be one of the most important tropical catfish for aquaculture (Clay, 1979). Various parasites are associated with *C. batrachus* where they cause morbidity, mortality and economic losses in aquaculture practice in the world (Subasinghe, 1995). Studies on the biology, nutrition/growth and management of catfish have been carried out by different workers in different countries (Viveen et al., 1977; Faturoti et al., 1986; Banyighi et al., 2001; Ovie and Ovie, 2002).

Males and females are readily distinguishable. The males possess distinct sexual papillae that are located behind the anus. A consequence of its high food value and the preference of the female fish for food (because of its delicious egg) by some, an investigation of the helminthes fauna of the fish was carried out to

determine whether there is a significant difference in the rate of infection between the sexes.

Materials and Methods

The specimens of *C. batrachus* from different man made ponds of Rupandehi district were purchased from fish sellers between June 2012 and November 2012. They were taken to the laboratory for examination of parasites. Apart from outward differential between sexes, they were split open for confirmatory sex determination. Males have a whitish testis which is serrated at the margin while females have reddish ovary which may contain eggs. The fish were dissected to expose the alimentary canal. The alimentary canal was thereafter removed and sectioned into its various parts, Esophagus and Stomach, Intestine and Rectum. The gut was used for parasitic examination because this is where food will be most abundant for the parasites. Each section was placed separately into dishes containing normal saline, incised and examined for parasites under a dissecting microscope. Parasites found were counted, placed in physiological saline overnight in a refrigerator to enable it stretch and relax. Thereafter the parasites were fixed in 5% formalin (Seinhorst 1966 and 1973). Parasites were stained overnight with a week erlich's hematoxylin solution and passed through graduated alcohol (30, 50, 70, 90% and absolute) for 45 minute to dehydrate, cleared in methyl-salicylate and mounted on a slide in Canada

balsam. Parasites were identified by using the texts of Yamaguti (1959 and 1961) and Cheng (1973). The term prevalence was applied as defined by Margolis et al. (1982).

Results and Discussions

One hundred and twenty specimens of wild *C. batrachus* were examined for parasites. Sixty were males and sixty were females. 25(41.67%) males and 25(41.67%) females showed parasitic infection (Table 1). Seventy six parasites belonging to three classes, Cestodes, Nematodes, and Acanthocephalan were recovered. Cestode types are, *Lytocestus indicus* and *Pseudocaryophyllaeus clariae*, nematodes – *Paracamallanus* sp. and *Procamallanus cancellus* and acanthocephalan – *Acanthocephalus* sp. were detected (Table 2). Twenty nine helminthes were recovered from males and forty seven from females (Table 1). Total prevalence of infection between the fish sexes was the same, though it varied for the different months (Table 1). However, there was a difference in the total intensity of infection between the sexes (Table 1). There was no particular trend in the prevalence and intensity of infection between the two sexes. Parasites were recovered from both fish sexes in all months that spanned the period of specimen collection. Result also showed that except for the month of June, all other months recorded more helminthes in females than in males (Table 1). Infections in females were highest in

August and September months of specimen collection (Table 1). Student's t-test analysis showed that there was no statically significant difference in prevalence and intensity of infection between the two sexes.

From the result, both sexes had equal prevalence of infection, 20.83%. Breeding of *C. batrachus* falls between March and July during which time gravid females are less active than males. It means that both sexes had equal chances of host parasite contact, that is, equal activities and this may just account for their prevalence being equal. In terms of the intensity of infection, females were more heavily infected. This may be attributed to their quest for survival. Since males are believed to be the stronger sex, they are able to explore available food resources better than the females. Females in their desperation for survival might have fed on other food particles that it will normally not feed on were food very abundant thereby taking up these infective organisms in the process.

The reason for the very high parasite load in the month of September is not farfetched. The sample area (Rupandehi, Nepal) usually experience high volume of water during rainy season. The month of August and September is considered the peak of rainy season in this part of the country. Contaminated food particles is expected to be more at this time and so contaminated food particles might have been taken which can increase the chances of parasite contact.

Table 1- Prevalence and Intensity of Infection of *C. batrachus* with respect to sex

Month	Sex	Number of fish examined	Number and percentage of fish infected*	Total number of parasites recovered	Prevalence (%)	Intensity of infection
June	M	8	4(50)	4	3.333	0.5
	F	12	2(16.67)	2	1.666	0.16
July	M	8	2(25)	5	1.666	0.625
	F	12	4(50)	6	3.333	0.5
August	M	10	4(40)	7	3.333	0.7
	F	10	4(40)	16	3.333	1.6
September	M	12	6(50)	6	5.0	0.5
	F	8	6(75)	14	5.0	1.75
October	M	12	7(58.33)	4	5.833	0.33
	F	8	5(62.5)	6	4.166	0.75
November	M	10	2(20)	3	1.666	0.33
	F	10	4(40)	3	3.333	0.33

* Number in parenthesis indicate percentage of infected fish

Table 2- Parasitic helminthes abundance in relation to sex of *C. batrachus*

Parasite species	Taxonomic group	No. recovered	No. in males	No. in females
<i>Lytocestus indicus</i>	Cestoda	6	1	5
<i>Pseudocaryophyllaeus clariae</i>	Cestoda	14	8	6
<i>Paracamallanus</i> sp.	Nematoda	36	12	24
<i>Procamallanus cancellus</i>	Nematoda	4	1	3
<i>Acanthocephalus</i> sp.	Acanthocephala	16	7	9

According to Ibiwoye et al., (2004), fishes are susceptible to heavy infestation with parasites mainly in the early rain when fishes are weakened by hibernation (a state of exhaustion). On the other hand, the result agree with that of Ibiwoye et al., (2004) and Mhaisen et al., (1988) who both reported more infection in female fish. Ibiwoye et al. (2004) reported that female fishes were generally more liable to infection with Cestodes, Nematodes and Acanthocephala which were the three groups of parasites recorded in this study. On the whole, student's t-test analysis showed there was no significant difference in infection between the sexes.

In conclusion, fish activities and time may have contributed to female *C. batrachus* being more infected with parasites than males. Longer time period and collection of more specimens will await further studies to be able to determine if there is risk of transfer of parasitaemia to humans feeding on more of a particular sex.

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