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Infestation of ectoparasites in *Gudusia chapra* (Hamilton)

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Abstract: One hundred *Gudusia chapra* ranging from 6 to 17 cm were examined on monthly basis. Of 100 fishes, 32 were male and 68 were female, sex ratio being 1:2.1. A total of 163 parasites were recovered from the host, which 70% were trematodes and 16% copepods. The overall prevalence of infection was 86% and the mean±SD intensity was 1.89±0.91. Heavy infestations (100%) were recorded in males of the largest (14.25-17.0 cm) and the smallest (6.0-8.75 cm) length groups. Total infection rate was also higher in males (87.72%) than in females (83.82%). Intensity of infestation in males and females was 1.62 and 2.03, respectively.

Key words: *Gudusia chapra*, ectoparasites, trematode, copepod, infestation intensity

Introduction

Gudusia chapra (Hamilton) is one of the most common fishes of inland fisheries of Bangladesh, whose culture is hampered by the infestation of various fish parasites. The importance of fish parasites is related directly to the importance of fish that they may affect (Hoffman, 1967). The fish parasites feed either on the digested contents of the host's intestine or tissue (Markov, 1946). The monogenetic trematode *Mazocraes*, Hermann, 1482 [syn. *Kuhnia* (Sproston, 1945 also described *Kuhnia thunni* as the synonym of *Dactylocotyle*); *Octobothrium* (Leuckart); *Octocotyle* (Dies). *Octostoma* (Kuhn)] has a very simple life cycle. They multiply rapidly under favourable conditions (Dogiel, 1956), cause economic loss by affecting the health of fishes and high mortality (Tripathi, 1959). The helminthes by their damaging activities can suppress the fish growth and in severe cases can kill them. The gill monogeneans, owing to their microscopic size and technical difficulties, were uncounted in their collection and study, and remained little known until the twentieth century. Monogenetic trematodes of freshwater fishes have been studied by Diesing (1856), Dujardin (1845), Gussev (1967) and others. Here we report the ectoparasitic infestations of *G. chapra* in which the copepod parasite *Ergasilus versicolor* is being reported for the first time in Bangladesh.

Materials and Methods

A total of 100 fishes collected on a monthly basis were examined to determine their ectoparasite community. The fishes were separated according to their sex and were measured for total length. At first microscopic examinations were done for ectoparasites and for any cysts, ulceration and scars. Then the gill filaments were dissected out of the branchial cavity and placed in a petridish containing normal saline solution (0.75% NaCl). All the collected parasites were fixed in glycerin alcohol (90 parts of 70% ethyl alcohol and 10 parts of glycerol), stained in Borax carmine and finally mounted in DPX.

Results and Discussion

Out of 100 *G. chapra*, 75 fishes were found infested by two types of parasites. The prevalence of ectoparasite infestation in this fish appeared 86%. The prevalence of. *Mazocraes indica* was 70% and that of *Ergasilus versicolor* was only 16%. The intensity of infestation was 1.98 and 1.5% in *M. indica* and *E. versicolor* respectively (Table 1). In female fish intensity was higher (2.03 %) than in male fishes (1.62 %). The prevalence of *M. indica* was found highest (71.87%) in 8.75-11.50 cm length group and highest intensity (2.04 and 2.53) in 11.50- 14.25 cm and 14.25-17.00 cm groups, respectively. Similarly, the prevalence and intensity of *E. versicolor* were found highest (22.72% and 2.2) in the length group of 14.25-17.00 cm. The effect of fish length on parasite infestation has been observed in the study period (Table 1). In different length groups of *G. chapra*, it was observed that the fishes of the 1st and 2nd intermediate length groups were more infested than the smaller and larger group of fishes. Bashirullah (1973) reported that the degree of parasitism was obviously related to the age of the host fishes.

As shown in Table 2, the prevalence and intensity of parasites in males and females of *G. chapra* in different length groups also varied. The prevalence of parasite infestation in male fish (87.72%) was higher than the female fishes (83.82%). The intensity of infection was also higher (2.03%) in female than in male (1.62%). In the smallest length group (6.0-8.75 cm), the prevalence of infected male (100%) was higher than female (72.72%). In the 1st intermediate length group (8.75-

11.50 cm), the prevalence of male (90.90%) was higher than that in female (85.71%) but the intensity was higher in female. In the 2nd intermediate length group (11.50-14.25 cm) the highest prevalence of infestation was shown by female fish (85.71%). In the highest length group (14.25-17.0 cm) the prevalence of infestation was higher in male (100%) than in female (86.66%). But the intensity was also higher in female (3.07%) than in male (1.85%).

Table 1. Prevalence and intensity of parasites in different length groups of *G. chapra*

Length groups (cm)	*M. indica*					*E. versicolor*				
	N_1	N_2	Prevalence (%)	N_3	Intensity (mean±sd)	N_1	N_2	Prevalence (%)	N_3	Intensity (mean±sd)
6.00-8.75	15	10	66.66	13	1.30±0.62	15	2	13.33	2	1.0±0.51
8.75-11.50	32	23	71.87	43	1.86±0.93	32	5	15.63	6	1.2±0.62
11.50-14.25	31	22	70.96	45	2.04±1.00	31	4	12.90	5	1.25±0.61
14.25-17.00	22	15	68.18	38	2.53±1.22	22	5	22.73	11	2.2±1.01
Total	100	70	70.00	139	1.98±0.94	100	16	16.00	24	1.5±0.71

N_1= Number of fishes examined; N_2=Number of fishes infected; N_3= Number of parasites collected

Table 2. Prevalence and intensity of parasitic infestation in different length groups of male and female *G. chapra*

Length group (cm)	Male					Female				
	N_1	N_2	Prevalence (%)	N_3	Intensity (mean±sd)	N_1	N_2	Prevalence (%)	N_3	Intensity (mean±sd)
6.00-8.75	4	4	100	9	2.25±1.12	11	8	72.72	14	1.75±0.88
8.75-11.50	11	10	90.90	10	1.0±0.5	21	18	85.71	38	2.11±1.11
11.50-14.25	10	8	80	15	1.87 ±0.93	21	18	85.71	24	1.33±0.65
14.25-17.00	7	7	100	13	1.85±0.93	15	13	86.66	40	3.07±1.51
Total	32	29	87.72	47	1.62±0.81	68	57	83.82	116	2..03±1.01

N_1= Number of fishes examined; N_2=Number of fishes infected; N_3= Number of parasites collected

Of the two types of parasites, trematodes showed the higher prevalence of infestation. The prevalence and intensity of trematode were 70% and 1.98% respectively. Copepods showed the lower prevalence of infection. The prevalence and intensity of copepods were 16% and 1.5% respectively. *M. indica* showed higher intensity (1.98) than that of *E. versicolor* (1.5%). The majority of parasites showed higher intensity in case of female hosts (2.03%).

It was observed that the infestation of *M. indica* started from very early stages of fish (6.00-8.75 cm). The prevalence was highest (71.87%) in the 1st intermediate length group and lowest (66.66%) in the smallest length group. The intensity was highest (2.53) in largest length group and lowest (1.30) in smallest length group. In case of *E. versicolor* 24 parasites infested 16 fishes in four length groups. The prevalence was highest (22.72%) in the largest length group and lowest (12.90%) in the 2nd intermediate length group. The intensity was also highest (2.2) in largest length group and lowest (1.0) in smallest length group (Table 1).

Among the gill inhabiting parasites, *M. indica* has been reported on *Cybium guttatum* by Tripathi (1959). Sproston (1945), Sprehn (1933) and Goto (1894) reported this parasite in different places of the fish body. The genus *Mazocraes* until now was reported only from marine fishes (Mamaev, 1975). The present work for the first time recorded *Mazocraes elongates* from the fish *Hilsa ililsha* in India. Monogenetic trematodes have been studied by Leuckart 1827, Kulkarni 1969, Mamaev 1981, and Hargis 1955. A new species of the ectoparasitic copepod *Ergasilus* has been described by Karamchandani (1952) from the gills of *Labeo bata*. Venkateshappa *et al.* (1988) reported a new species *E. malnadensis* from *Wallago attu.*

In the host the female fishes were more infected than the male ones. Thomas (1964), Bibbly (1972) and Watson & Dick (1980) concluded that due to lower physiological resistance, the female is responsible for higher infestation rather than ecological conditions. The present study recorded a significant relationship between the host length and the intensity of parasites in *G. chapra*. It revealed that the fishes of the 2nd intermediate (11.50-14.25 cm) and large (14.25-17.0 cm) length groups were heavily infested than the smallest and the 1st intermediate length groups. These results are in good accord with those of Stromberg & Crites (1975), who reported that the prevalence and intensity of infestation generally increased with the host size up to a certain point and then declined.

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