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PREVALENCE OF ENDOPARASITES IN FRESH WATER FISHES IN RIVER PUNJKORHA, KHYBER PUKHTUNKHWA PAKISTAN

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Abstract:

A total of 120 samples of fresh water fishes were collected and examined from River Punjkorha from July to October, 2010. Overall prevalence of endo-parasites in fresh water fishes was 41.67 percent. The species found in fresh water fishes were: *Rhobdocorna magna* (7.5%), *Camallanus* (11.7%), *Senga taunsaensis* (6.67%) and *Helicometra fasciata*, were (15%). Five different species were identified which includes, *Salmostoma bacilia*, *Labeo calbasu*, *Rita rita*, *Channa striatus* and *Mystus vittatus*. Their numbers were respectively, 37, 26, 42, 6, and 9. Salmostoma Bacilia was 35.2% infected, *Labeo calbasu* was 65%, *Rita rita* was 33.4%, *Mystus vittatus* 22.2% and *Channa striatus* were 50% infected.

Keywords: Fresh Water Fish, Endoparasites, Prevalence

INTRODUCTION

Fish parasites are a group of organisms that may or may not cause illness in fish, depending on a number of factors. The fish which is infected with a parasite is called the host. Some parasites have developed organs such as suckers for attachment and some lay large number of eggs. Parasites have the ability to change their nature biochemically and immunologically therefore they can survive inside another organism and can not be digested or killed. Some of the parasites depend on their hosts for compounds, which their ancestors could synthesize **[1]**. The parasitic infections are sometimes very fatal and can increase mortalities **[2]**.

The parasites do not kill their hosts, because extinct hosts can mean extinct parasites. Evolutionary constraints may operate so

parasites avoid killing their hosts, or the natural variability in host defensive system may enhance to keep host populations viable **[3]**. However not all parasites want to keep their hosts alive, and there are some parasites with multistage life cycles who go to some trouble to kill their host **[4, 5]**.

The major parasitic groups found in freshwater fishes are Trematodes, Cestodes, Acanthocephalans and Nematodes that complete their lives cycles through intermediate hosts like piscivorous birds **[6]**. 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 **[2]**. In keeping in view the importance of the cold water fishes and the damages occur due to parasitic infection i.e. its quality and market value, the present project is design to identify the fresh water fishes as well as the prevalence of endoparasites in Fresh water fishes of River Punjkorha in Khyber Pukhtunkhwa Pakistan.

MATERIALS AND METHODS

The study was carried during July to Sept, 2010 in Area of lower Dir Khyber Pukhtunkhwa and the fresh water fish were collected from river Punjkorha, lower Dir (Area "khaal" and "Rabaat It was hilly area and River Punjkorha has fresh and cold water. River Punjkorha was located on North West Khyber Pukhtunkhwa.

The fish net were used for capturing of the fishes and were transferred to ice box for preservation and later on transported to the lab of department of Zoology, Kohat University of Science and Technology Kohat for further process. The fishes were identified as per the standard taxonomic procedure and their characteristics were recorded. The guts were opened and faecal materials were squeezed into the Petri dishes then add the concentrated salt solutions mixed thoroughly. The Slides were prepared and examined at 10 x, 40 x and 100 x magnification under the microscope and freeze the photograph of the images and compare with the positive slides of parasite s and eggs/ ova of the fish endo parasites .Some slides were not very much vivid under the microscope, so as to get the better results; all the slides were given the Giemsa stain and then examined under the microscope.

RESULTS AND DISCUSSION

A total of 120 fresh water fish were examined for identification of the fishes, amongst these 37 were *Salmostoma bacilia* in which 13 (35.2%) were infected with parasites having 8 (21.62%) Nematodes, 5 (13.51%)

Trematodes and no Cestodes were found. The highest prevalence rate was observed in *Salmostoma bacilia* species. Similarly, 26 fishes were *Labeo calbasu* in which 17 (65%) were infected having 11 (42.3%) Nematodes, 4 (15.38%) Trematodes and 5 (19.2%) Cestodes Infection and 42 samples were of *Rita rita* in which 14 (33.34%). Out of these infected fishes 3 (7.14%) had nematodes, 6 (14.28%) had Trematoads, and 5(11.9%) had Cestoads.

The lowest prevalence were recorded in *Channa striatus* having 6 samples in which 1 (16.66%) were nematodes, 1 (16.66%) Trematodes and 1 (16.66%) Cestodes and followed by *Mystus vittatus* in which only 2 (22.22%) had Trematods **(Table 1)**.

Fresh water fishes were studied from the river Punjkorha **(Table 2)**. Their results were correlated with the other result of the researcher with a little different, may be due to the environmental and ecological situation of the fishes and also the parasites Fish parasites are generally found in all freshwater fishes. The parasite prevalence and intensity was reported in the present study which depends on many factors such as parasitic nature and its life cycle, host , feeding habits and the physical factors of water body where the fish habitat. It also depends upon the presence of intermediate host. For example piscivorous birds for the spread of Cestoads infection as was observed in the study **[7]**.

It was found in the present study that a total of 9 specimens of *M. vittatus,* only 2 (22%) were found infected although, a similarly study was conducted by **[8]** where he reflected that it was 37.5 percent. The fluctuation in the result may be due to environmental factor or by using different approaches. The finding of the other researcher revealed that 16 c*hanna striatus* having, only 9 (56.25%) were found infected by parasites while in the present it was 3(50%) out of 6 fishes were found infected.

Further added that striatus spp of the fresh water fish which was infected with Trematoad (*Helicometra fasciata*) and infection rate was reported in this study was 1 (16.66%) and similarly fish was reported which was infected for trematodes(pallisentis ophiocephalis) having (100%) were positive **[8]**.

In present study out of 9 fishes 1 (16.66%) was infected with Nematode (Rhabdochona Magna).similar Nematodes *(Rhabdochona magna)* was found in infected Fishes during the research work of **[8]** which positive result was 55.56 percent. This variation may be because of stained testing or computer based study. In this recent study only 17% were infected by Cestoads (*Senga Taunsaensis)*.

The similar study was done by **[8]**. Their 4 fishes out of 16 were infected with cestodes *(Senga taunsaensis)* which represent 44.45 percent prevalence. Fluctuation in the result may be dependent on nature of water or techniques which were used during research work.

The nematode infection in *C. punctatus* was low because of its feeding habits which are similar to that *of M. vittalus* as it is ingesting infected food very occasionally. The low prevalence of cestodes infection may be due to discontinuity of the pond itself. Since these ponds are not permanent one that is; they get dry very often when rain water is not available, the life cycle for cestodes get disturbed or blocked **[7]**. In this study the results are almost similar to that of described by **[7]**. The lowest prevalence rate is found of the Cestoads and Nematodes were in high number. The concentration of the four analyzed parasites in the samples of fishes from river Punjkorha displayed significant spatial distribution, suggesting similar patterns of their distribution as discussed earlier.

Table 1: Morphological Characteristics of Fishes of River Punjkorha Dir

S. No	Name of Fishes	No. of Fishes	Parasites Location	Parasites			%
				Nematodes	Trematoads	Cestoads	
1.	*Salmostoma bacilia*	37	Ntestine	+8	+5	-	35.2
2.	*Leabo calbasu*	26	Intestine	+11	+4	+2	65
3.	*Rita rita*	42	Intestine	+3	+6	+5	33.4
4.	*Mystus vittatus*	9	Intestine	-	+2	-	22.2
5.	*Channa striatus*	6	Intestine	+1	+1	+1	50
Grand Total;		120	-	23	18	8	-

Table 2: Prevalence of Endoparasites in Fresh Water Fishes of River Punjkorha Dir

S. No	Name of Fish Species	No. of Samples	Average Length of fish	Average Width of Fish	Approximate Age of fish	Fish Morphology
1.	*Salmostoma bacilia*	37	29.6 cm	9cm	Mature	Barbells 2 to 4, Teeth on jaws Always Absent, Color Uniform Silvery
2.	*Leabo calbasu*	26	19 cm	8 cm	Mature	Barbells 2, Lateral Lines Scale 40 to 44, Ventral Side Lighter
3.	*Rita rita*	42	11 cm	5 cm	Mature	Greenish Brown on the Back, Lighter Beneath, Anal Fin 7-12, Barbells 6, Eyes Subcutaneous
4.	*Mystus vittatus*	9	17 cm	4.5 cm	Mature	Silvery Grey or Golden, Fins are Usually Edged Black
5.	*Channa striatus*	6	21 cm	5.5 cm	Mature	Dark Grayish or Black above, Dirty White Below, Fin Grayish

CONCLUSIONS

It was concluded from the study that the parasitic infection causes the damages of the cold water fishes and decrease its market value which was source of the poor community for earning their lively hood. It was suggested that proper method of preservation and treatment to the community may be given to avoid the fish deterioration.

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