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**Ecology and Seasonal Dynamics of Occurrence of
Camallanus, Railliet and Henry, 1915, in
Alimentary Canal of Fresh Water Fish
Schizothorax richardsoni from Poonch River of
Jammu and Kashmir, Union Territory of India**

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Abstract - A new nematode species, *Camallanus schizothoraxi* is described from the intestine of fresh water fish *Schizothorax richardsoni* (Ham.) from Poonch river of J&K UT of India. Its data on seasonal variation in its occurrence in the definitive host *Schizothorax richardsoni* are provided based on samples fish collected every month starting from Dec. 2009 to Nov. 2011. A total of 480 fish were examined out of which 86 were found infected with 206 nematodes. The hosts were recovered from Poonch river. In both the years under investigation the nematode was not recovered during months from December to February however the highest value of prevalence and mean intensity was reported in June and July both years.

Keywords - Seasonal variation, *Schizothorax richardsoni*, *Camallanus schizothoraxi*, Poonch river.

I. Introduction

Camallanus schizothoraxi n. sp.: Worms belonging to genus *Camallanus* Railliet and Henry, 1915. It was recovered from fish host *Schizothorax richardsoni*. The recovery of this parasite belonging to genus *Camallanus* from host fish *Schizothorax richardsoni* happens to be the first host record not only from India but also from other South Asian countries as well. In Poonch river) *Camallanus schizothoraxi* infection exhibited peak in summer months when temperature, depth and CO₃” showed high value.

II. Materials and Methods

The host *Schizothorax richardsoni* was collected from Poonch river of J&K UT. Recovery of parasites was done as per the methods employed by Moravec et al. (1997). The nematodes were fixed in hot 70% alcohol and preserved in 10% glycerene alcohol. The specimens were cleared in lactophenol for appropriate observation. En face preparations followed the methods of Anderson (1958), and identification of these nematodes to species level was based on Yamagutti (1961), Moravec and Arai (1971) and Sood (1959).

Metazoan found parasitic in different hosts at all the stations have been subjected to ecological analysis through following procedure.

$$\text{Prevalance} : \frac{\text{Total No of Hosts infected}}{\text{Total no. of hosts examined}} \times 100$$

$$\text{Mean Intensity} = \frac{\text{Total no. of parasites}}{\text{Total no. of infected hosts examined}}$$

$$\text{Relative density or Abundance} = \frac{\text{Total No of Parasites}}{\text{Total No. of Host Examined}}$$

The above nomenclature is followed by that given by Bush et. Al. 1997.

III. Result and Discussion

Camallanus schizothoraxi n. sp. (Table 1)

This nematode parasite was recovered from fish host *Schizothorax richardsoni* from one Station only. Out of 480 fishes scanned for the metazoan parasitic burden just 83 hosts were found infected by 206 *Camallanus schizothoraxi* n. sp. Maximum prevalence recorded was 70% in July 1st year and during June and July 2nd year. Mean intensity was recorded to be maximum 3.3 in month of April 1st year and 2.6 in month of November 2nd year. Relative density was observed to be 1.4 and 1.6 in the month of June-July during 1st and 2nd year respectively.

Table- 1: Prevalence, Mean Intensity and Relative Density of *Camallanus schizothoraxi* infection recorded from host *Schizothorax richardsoni* from Poonch river, Station I for period Dec. 2009 to Nov. 2011.

Month	No. Exam	<i>Camallanus schizothoraxi</i>				
		No. Inf.	Tot. P.	Pr.	M.I.	R.D.
Dec. 2009	20	0	0	0.00	0.00	0.00
Jan. 2010	20	0	0	0.00	0.00	0.00
Feb. 2010	20	0	0	0.00	0.00	0.00
Mar. 2010	20	3	8	30	2.6	0.8
April 2010	20	4	10	40.0	3.3	1.0
May 2010	20	5	12	50.0	2.4	1.2
June 2010	20	6	14	60.0	2.3	1.4
July 2010	20	6	14	70.0	2.3	1.4
Aug. 2010	20	5	12	50.0	2.4	1.2
Sep. 2010	20	4	10	40.0	2.5	1.0
Oct. 2010	20	4	8	40.0	2.0	0.8
Nov. 2010	20	2	6	20.0	3.0	0.6
	0	0	0	0	0	0
Dec. 2010	20	0	0	0.00	0.00	0.00
Jan. 2011	20	0	0	0.00	0.00	0.00
Feb. 2011	20	0	0	0.00	0.00	0.00
March 2011	20	4	10	40.0	2.5	1.0
April 2011	20	5	12	50.0	2.4	1.2
May 2011	20	6	14	60	2.3	1.4
June 2011	20	7	16	70.0	2.2	1.6
July 2011	20	7	16	70.0	2.2	1.6
Aug. 2011	20	6	14	60.0	2.3	1.4
Sept. 2011	20	5	12	50.0	2.4	1.2
Oct.. 2011	20	4	10	40.0	2.5	1.0
Nov. 2011	20	3	8	30.0	2.6	0.8
Total	480	86	206	870.00	44.20	20.60

No. Exam. = Number of fishes examined

No. Inf. = Number of fishes infected

Tot. P. = Total number of Parasites

Pr. = Prevalence
M.I. = Mean Intensity
R.D. = Relative Density

Table 2: Correlation between physico-chemical parameters and prevalence of *Camallanus schizothoraxi* infection from the fishes of Station I.

Month	Temperature °C		Transparency	Depth	pH	DO	FC O ₂	CO ₃ ^{''}	HCO ₃ [']	Prevalence
	Atmospheric	Water								
Dec. 2006	10.0	10.5	36.0	36.0	8.5	10.8	-	14.7	50.2	0
Jan. 2007	13.0	11.0	36.0	36.0	8.4	9.8	-	15.2	52.0	0
Feb. 2007	15.0	12.0	35.5	35.5	8.5	9.9	-	16.6	52.6	0
March 2007	23.5	16.5	48.8	48.8	8.3	10.0	-	18.0	45.5	30.0
April 2007	28.5	21.0	56.0	56.0	8.1	10.8	-	18.8	36.6	40.0
May 2007	31.2	24.5	52.6	52.6	7.9	7.8	-	28.6	33.2	50.0
June 2007	36.5	25.5	52.6	52.6	7.8	6.8	-	38.2	31.6	60.0
July 2007	32.4	24.2	17.5	65.9	8.1	8.8	-	38.0	30.2	70.0
Aug. 2007	28.2	23.2	23.5	62.6	7.9	7.8	-	30.6	32.0	50.0
Sept. 2007	24.5	21.0	58.0	58.0	8.0	7.4	-	28.5	32.6	40.0
Oct. 2007	26.0	19.5	56.2	56.2	8.0	7.2	-	26.1	33.9	40.0
Nov. 2007	17.0	14.0	56.1	56.1	8.2	9.0	-	16.6	38.9	20.0

IV. *Camallanus schizothoraxi*

In Poonch river at Station I (Table 2) *Camallanus schizothoraxi* infection showed peaks in summer months when temperature, depth and CO₃^{''} showed high value. The prevalence of the infection shows positive correlation with temperature (0.96, 0.95 atmospheric, 0.012, 0.956 water) depth (0.87, 0.61) and CO₃^{''} (0.90, 0.67) and negative correlation with transparency (-0.87, -0.207), pH(-0.383), Do (-0.63, -0.54) and HCO₃['] (-0.93, -0.91).

Seasonal prevalence, mean density and relative density of parasites:

The prevalence of parasites was found maximum during warmer months of the year with peaks in June and July. The mean intensity which indicates the total number of parasites per individual of infected hosts, showed a higher value in summer months when temperature is higher as compared to winter months. The relative density which is the total number of parasites in an individual out of the total hosts examined, also revealed higher value in summer months as compared to winter months.

The present investigation is a preliminary attempt of its type from the region as far as correlation between environmental factors and prevalence of parasites is concerned. Detailed studies on the life histories of these parasites on one hand and their relationship with external ecological factors on the other hand are however required which would be of great significance to design a preventive protocol against their infection particularly for fish farmers/culturists.

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VI. References

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