



AN ECOLOGICAL STUDY ON DIGENETIC TREMATODE PARASITES OF CHANNA PUNCTATUS(BL.)GOBIND SAGAR RESERVOIR, LALITPUR, UTTAR PRADESH

Jag Mohan Sen

H N 323 GUDRI BAZAR BEHIND
GUDRI SCHOOL JHANSI UP 284002

ABSTRACT

Channa punctatus(Bl.) is one of the common freshwater fish species of Uttar Pradesh abundantly found in Gobind Sagar Reservoir, different ponds and river of Bundelkhand region, Lalitpur. This fish species carry heavy infection of trematode parasites and serve as the host of different helminth parasites. Infection of these parasites may be result in poor growth, postpone sexual maturity and mortality of fishes, and cause human and animal diseases. Digenean trematodes are important helminth parasites of *Channa punctatus*(Bl.). In this paper we have reported the seasonal changes in prevalence, intensity and relative density patterns of digenean infection in *Channa punctatus*(Bl.)during the March 2016 to February 2017. The result showed highest prevalence during summer and lowest in rainy season. The mean intensity of trematode infection was highest during summer and lowest in rainy season. The relative density of trematode infection was also higher in summer but lowest during rainy season.

Keywords: *Channa punctatus*, Digenetic Trematodes, Gobind Sagar Reservoir, Intensity, Prevalence and Infection.

INTRODUCTION

Fishes are economically important and useful for millions of human beings who depend on their rich proteineous food and oil. Fishes are also the source of different vitamins (as A & D) and minerals. They are important for providing nourishment to poultry and cattle, and also useful

for producing a high quality of manure especially for citrus plant, as a source of nitrogen and phosphate. Fish oil is of a great medicinal value. Majority of fresh water fishes carry heavy infection of digenetic trematodes which cause deterioration in food value of fish and may even result in their mortality. Besides these, there are a number of digenetic trematodes are transmitted to human beings only through fishes. The study of digenetic trematodes, its frequency and distribution in fishes, is very scant in Lalitpur. Compared to the considerable progress achieved by India and other regions.

MATERIAL & METHOD

For the present investigation live specimens of fresh water fishes *Channa punctatus* have been collected from Gobind Sagar Reservoir at Lalitpur Reservoir at Bundelkhand region. Hosts were kept alive in aquarium under standard laboratory condition. To survey for the ecological study of the trematode parasites parasitic over *Channa punctatus* frequency distribution of the parasite was determined and number of fishes grouped together and kept in the batches in laboratory aquarium under standard condition the pH of the water was checked and proper O₂ balance was maintained. Food pellets were given at regular interval to keep them alive.

For the collection of trematode parasites, the important parts of the fishes like gills, stomach, intestine, liver kidney and airbladder were dissected, trematode parasites were collected in normal saline water, were pressed under the cover glass in 70% alcohol for 24 hours then preserved in 5% formalin solution. The trematode parasites for each fish were counted. For the determination of prevalence Margil's (1982) parameter which basically indicate the abundance of the parasites as define by Bloch et al (1997).

The parasites were collected in the month of March 2016 up to February 2017.

$$\text{Prevalence} = \frac{\text{Total Number of Hosts Infected}}{\text{Total Number of Hosts Examined}}$$

$$\text{Mean Intensity} = \frac{\text{Total Number of Trematodes Obtained}}{\text{Total Number of Hosts Infected}}$$

Total Number of Trematodes Obtained

Relative Density = -----

Total Number of Hosts Examined

RESULTS & DISCUSSION

During the ecological survey of the trematode infection in the fish *Channa punctatus* during the month of March 2016 up to February 2017, 199 fresh water fish, *Channa punctatus* (Bl.) were sacrificed, out of which 74 were found infected with 105 trematodes parasites (Figure2-7). Average seasonal variation in the prevalence, mean intensity and relative density of trematodes infecting hosts were as follows.



Figure. 1. *Channa punctatus* (Bl.)

eason	No. of Hosts		Prevalence	No.of trematodes obtained	Mean Intensity	Relative Density
	Examined	Infected				
Summer	75	37	0.493	58	1.567	0.773
Rainy	49	15	0.306	18	1.2	0.367
Winter	78	30	0.384	41	1.366	0.525

Table.1. Average Seasonal variation in Prevalence, Mean Intensity and Relative Density of

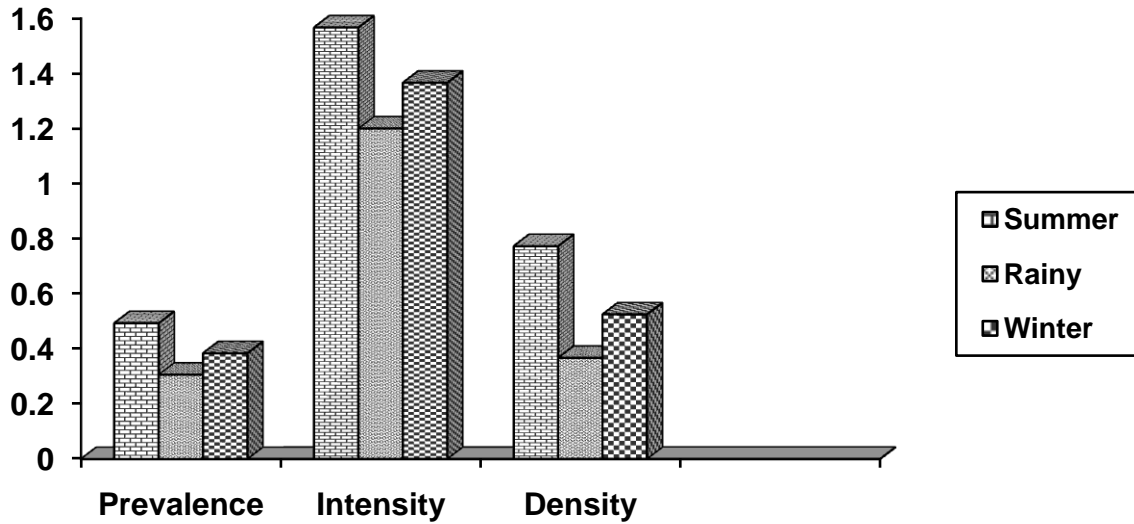


Figure.2.Relation of Prevalence, Mean Intensity and Relative Density of *Channa punctatus* (Bl.) with the Seasons in 2016-2017.

Month/ Year	No of Hosts		Prevalence	No. of Trematode obtained	Mean Intensity	Relative Density
	Examined	Infected				
Mar. 16	24	9	0.428	19	2.111	0.791
Apr. 16	21	12	0.571	18	1.5	0.857
May.16	16	9	0.562	13	1.444	0.812
Jun. 16	14	5	0.5	9	0.642	0.642
Jul. 16	15	7	0.333	6	1.2	0.4
Aug. 16	13	4	0.307	3	0.75	0.230

Sep. 16	9	3	0.333	5	1.666	0.555
Oct. 16	12	3	0.25	4	1.333	0.333
Nov. 16	23	9	0.391	15	1.666	0.652
Dec. 16	20	8	0.4	11	1.375	0.55
Jan. 17	17	7	0.411	6	0.857	0.352
Feb. 17	18	6	0.333	9	1.5	0.5

Table.2. Average month wise variation in Prevalence, Mean Intensity and Relative Density of Trematode infection in *Channa punctatus* (Bl.) during Mar.2016 - Feb.2017.

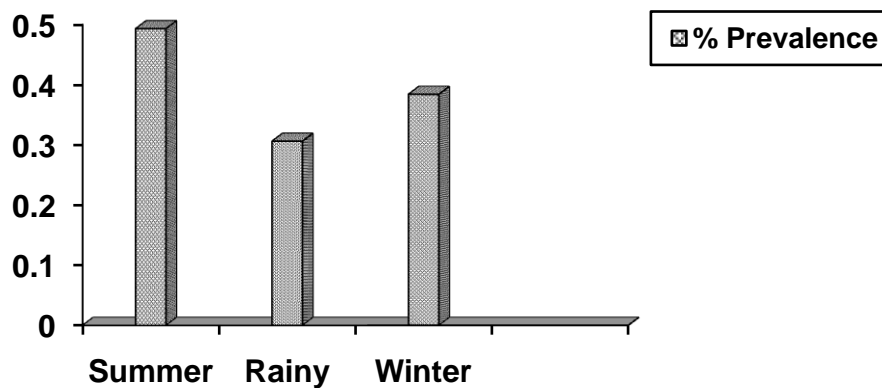


Figure. 2. Seasonal variation in Prevalence of Trematode Parasites of *Channa Punctatus* (Bl.)

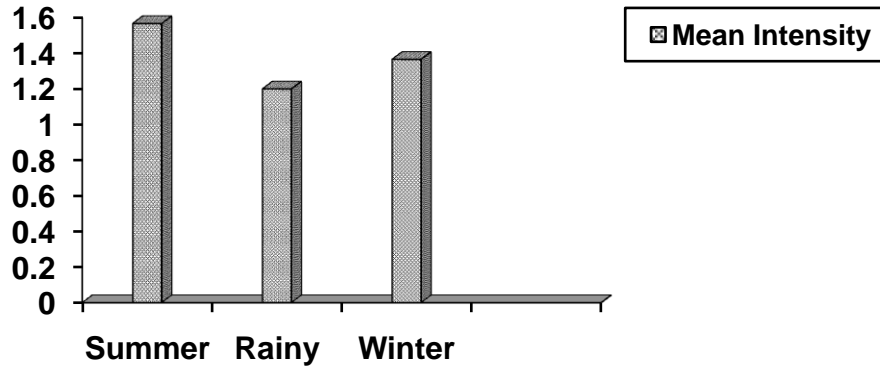


Figure. 3. Seasonal variation in Mean Intensity of Trematode Parasites of *Channa Punctatus* (Bl.)

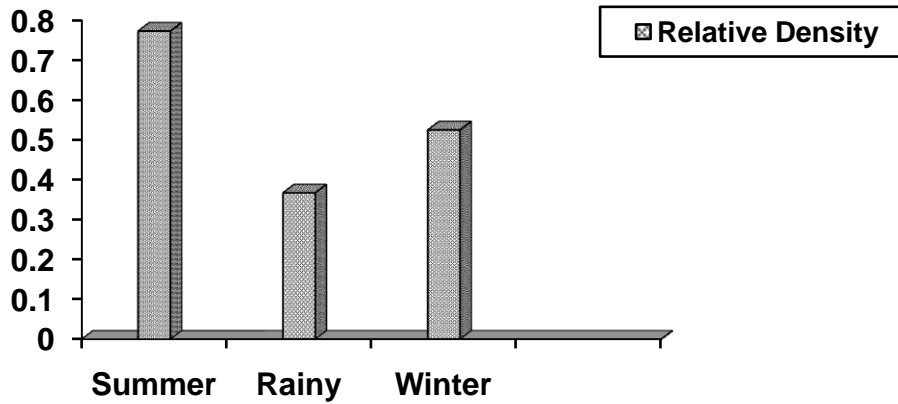


Figure. 4. Seasonal variation in Relative Density of Trematode Parasites of *Channa Punctatus* (Bl.)

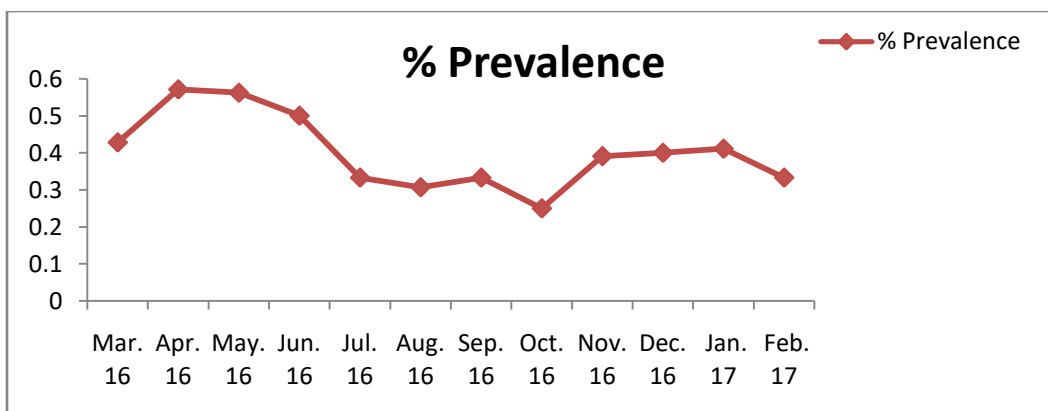


Figure. 5 Prevalence of Trematode Parasites of *Channa punctatus* (Bl.)

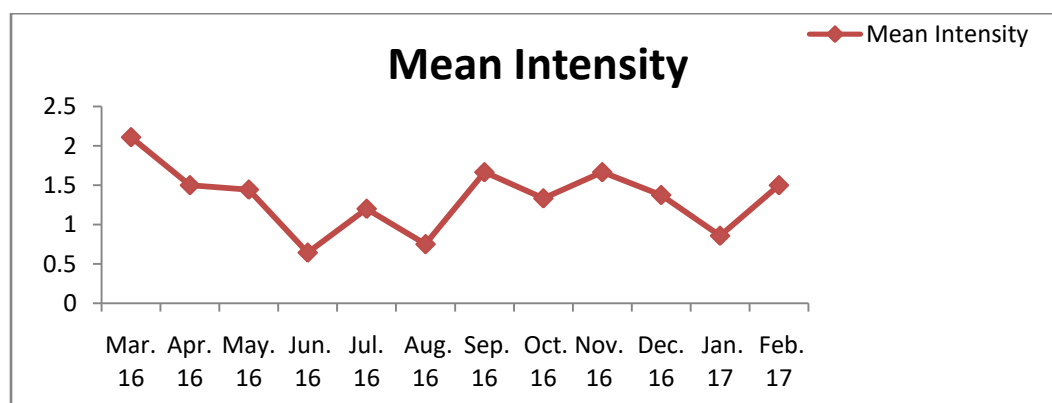


Figure. 6 Mean intensity of Trematode Parasites of *Channa punctatus* (Bl.)

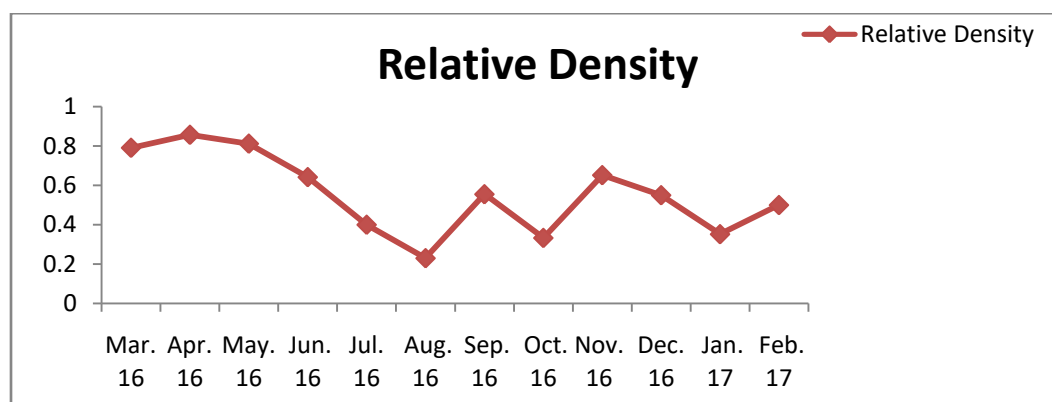


Figure. 7 Relative Density of Trematode Parasites of *Channa punctatus* (Bl.)

The prevalence of trematode infection was highest during summer season (0.493) and lowest (0.306) in rainy season. (Table. No.-1).

Average month wise variations in prevalence, mean intensity and relative density of trematodes infection in *Channa punctatus* were studied (Table. No.-2). The maximum prevalence (0.571) was recorded in the month of April. There is drop of prevalence (0.25) in the month of October. During the rest of the year, it ranges from (0.4 to 0.562). The maximum mean intensity (2.111) was recorded in the month of March. There is drop of mean intensity (0.75) in the month of August. In other month, it ranged from (0.642 to 1.66). The relative density was maximum

(0.857) in the month of April. There is a drop of relative density (0.4) in month July. it ranged (0.55 to 0.812) in the rest of the months.

It has been concluded that the prevalence of trematode in *Channa punctatus* was highest during summer and lowest in rainy season. The mean intensity of trematode infection was highest during summer and lowest in rainy season. The relative density of trematode infection was also higher in summer but lowest during rainy season (Table. No. 1 & Fig. No. 1).

The maximum prevalence was recorded in the month of April, while minimum in the month of December. The maximum mean intensity was recorded in March, where as minimum in the month of August. The relative density was maximum in the month of April, while minimum in the month of July (Table No-2).

The study suggest that highest prevalence of infection occurred in summer season followed by winter season. This result shows the morphological, physiological and ecological factors affecting the distribution of trematode parasites.

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