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Ecological effect of parameters with digenetic trematode parasites in fresh water fish

Singh Prashant[1], Mishra DB[2], Dubey JK[3], Singh HS[4]
[1-4] Department of Zoology, Tilak Dhari College, Jaunpur, Uttar Pradesh, India

Abstract
Trematodes are infectious agent affect the fishes and other livings things. In our society the humans beings use to much amount of fish food to survival. Through the feeding medium they entered into the human body. So some time suffered with trematode infections. In case of digenean trematode both hosts are susceptible to the affect of infection cause deterioration in their health. A total no of 180 samples was collectrd. In which 95 fishes carried infection. Total 206 parasites were recovered.

Keywords: Digenean trematode parasites, *Channa gachua*

1. Introduction
For fulfilling the need of food for human population we largely depend on the fish. Capturing of fish done on a large scale in whole world, after eating the fish they come in the contact with FBT (Food Borne Trematodiasis). Then cause a large health problem world wide. There are a number of helminth parasites which are transmitted to human beings only through fish [3]. These parasites use the fish for their shelter and food and destruct every organs resulting in pathogenic effects [1]. Parasites interfere with the nutrition, metabolism and secreatory function of alimentory canal, damage nervous system [5]. Community of helminth parasites in *Rita rita* [11]. Organal distribution of helminth parasites in *Macrognathus aculeatus* [13]. Distribution of helminth parasites in different size group and organs of fish [16]. Prevalence of helminth parasites infecting *Channa punctatus* [19]. Presence of digenetic trematode parasites in fresh water carnivorous fishes [25]. Prevalence of parasitic infections in the fresh water fishes [24]. A survey on helminth parasites of fish from Jaikwadi Dam were described [12]. Comparative study of helminth parasites in freshwater fish, Channa punctatus [21]. A Ecological aspects on digenetic trematode parasites of fresh water fish from Uttar Pradesh [20]. Parasitic distribution in relation to gender, season and length of fish hosts in Shallabugh wetland [18]. Seasonal incidence of helminth parasites of three selected murrel fish species of Assam [17]. Helminth reachness discover in the fishes of Arunanchal Pradesh [15]. Acomparative study of parasites infecting some selected fish from the water bodies of Kashmir Valley [14]. Digenean trematode parasites and cyprinid fish *Catla catla* [28]. Occurance of digenean trematode parasites in fresh water fish [26]. Presence of digenetic trematode parasites of cypriniformes fish *Labeo rohita* [27]. In our observation we trying to known the different ecological parameters of digenean trematode parasites in *Channa gachua.*

2. Research components
2.1 Sample Source
Sai River – (i) Bargudhar ghat
(ii) Khampur ghat
Ponds - (i) Banaba pond
(ii) Kandharpur pond

2.2 Working time - 1July 2018 to 31 June 2019

2.3 Fish collection
Channa gachua, the dwarf snakehead, is a species of fish in the family Channidae. *C. gachua* is native to fresh water habitats in southern Asia. The species can reach 28 cm in total length but most individuals are much smaller [22]. It feeds on small fish, insects and crustaceans [22]. Males have more extended dorsal and anal fins than females and develops more intense colour pattern [23]. It can live in large rivers or small brooks and creeks, in fast currents or stagnant waters, and in altered waterways such as canal [22]. It also lives in rice paddies [7, 29].
Channa gachua of all size, weight and sex were collected alive from the different study spots in district jaunpur. They were carried in plastic container and put them in a soil tank.

2.4 Standard length and weight measurement
Measuring board are use for measuring the length in centimeter (cm) and weighed in gram (gm) using weighing balance [8].

2.5 Examination, Processing, identification and statistical formula
Standard protocol are used for all samples to open them darsoventrally and observing their internal organs. They were fixed in hot 10% formalin (trematodes). Then followed by borax carmine. After washing with with distilled water, ascending grades of alcohol are used and then cleaned in xylene and Canada balsam mounting occur. Helminth parasites were identified up to class level on the basis of available taxonomical characters as described by [2, 4, 6]. Keys to the trematode and about digenean trematode described by many researchers [9, 10].

3. Results
Foolowing data and graph are found in our work –

Table 1.1: Ecological aspects and *Channa gachua* (Monthly)

Month	No of Host Examined	No of Host Infected	No of Parasites	Prevalence %	Abundance %	Mean Intensity	Dominance
Jan	14	3	4	60	133.33	2.22	0.09
Feb	16	5	7	76.92	100	1.3	0.06
Mar	11	2	5	69.23	92.30	1.33	0.05
Apr	13	3	4	68.75	93.75	1.36	0.07
May	11	4	10	76.47	111.76	1.46	0.09
Jun	17	6	13	42.10	89.47	2.12	0.08
Jul	12	5	10	80	240	3.00	0.17
Aug	10	3	12	33.33	141.66	4.25	0.08
Sep	11	5	9	21.42	92.85	4.33	0.06
Oct	13	2	3	41.17	141.17	3.42	0.11
Nov	9	1	1	41.66	91.66	2.20	0.05
Dec	5	1	2	23.52	52.94	2.25	0.04

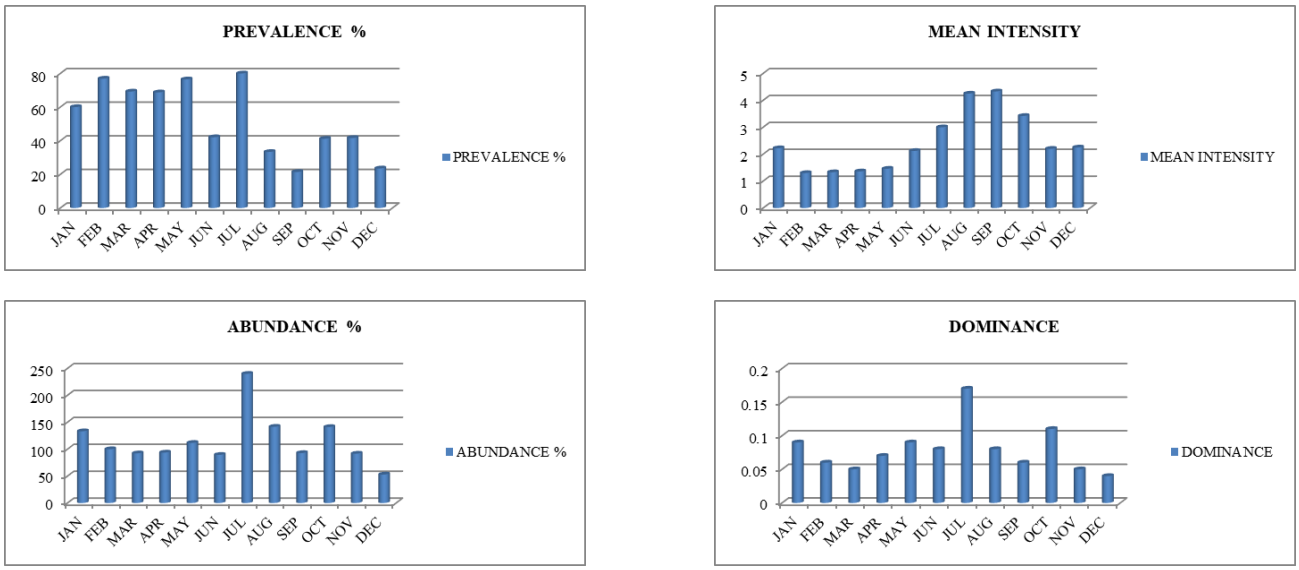

Fig 1: Table No 1.1 Graph

Table 1.2: Ecological aspects and *Channa gachua* (Seasonally)

Seasons	No of Host Examined	No of Host Infected	No of Parasites	Prevalence %	Abundance %	Mean Intensity %	Dominant %
Summer	65	41	63	63.07	96.92	1.53	0.30
Rainy	58	26	90	44.82	155.17	3.46	0.43
Winter	57	28	53	49.12	92.98	1.89	0.25

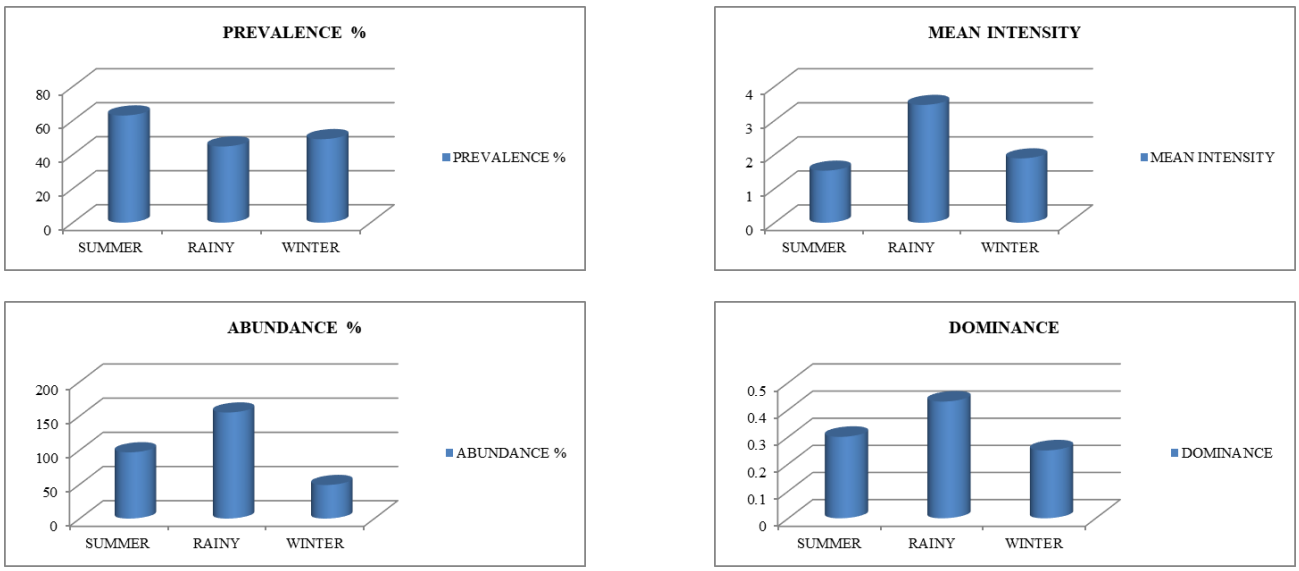

Fig 2: Table no. 1.2 Graph

Table 1.3: Ecological aspects and *Channa gachua* (Monthly)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
I.I.	12.00	10.00	8.30	10.31	14.52	7.15	28.80	5.66	2.78	9.88	4.58	2.11

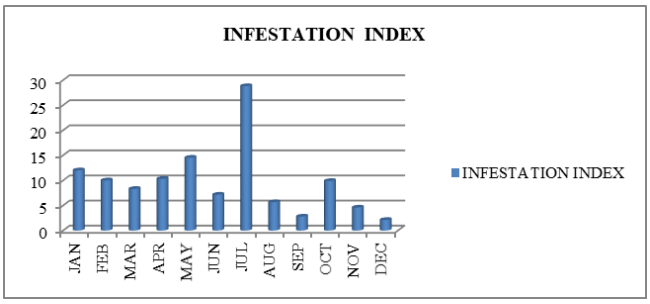

Fig 3: Table No 1.3 Graph

Table 1.4: Relation of I.I. and *Channa gachua* (Seasonally)

Seasons	Summer	Rainy	Winter
I.I.	39.73	40.34	26.03

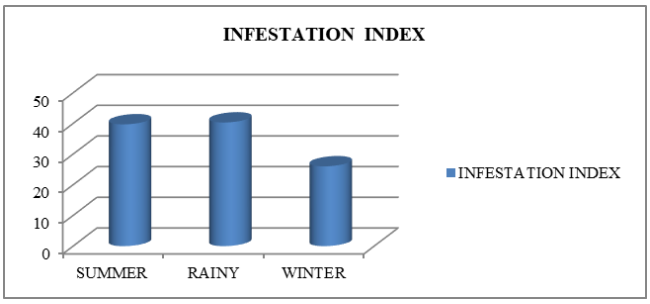

Fig 4: Table no. 1.4 Graph

4. Equation

$$\text{Prevalence \%} = \frac{\text{Total no of fish infected}}{\text{Total no. of fish host examined}} \times 100 \quad (1)$$

$$\text{Abundance} = \frac{\text{Total no. of parasites recovered}}{\text{Total no. of fish examined}} \quad (2)$$

$$\text{Mean Intensity} = \frac{\text{Total no of parasites recovered}}{\text{Total no. of host infected}} \quad (3)$$

$$\text{Index of infection} = \frac{\text{No. of host infected} \times \text{No. of parasites recovered}}{\text{Total host examined}} \quad (4)$$

$$\text{Dominant \%} = \frac{\text{Warm burden monthly*100}}{\text{Warm burden annualy}} \quad (5)$$

5. Conclusion

In present study we find the load of digenetic trematode parasites in *Channa gachua*. It shows that heavy load was differ with change in temperature (monthly as well as seasonally). On the basis of table we found that maximum infestation index occur in the rainy season and minimum in the summer season. Pollution are also important factor which suppress the immune system of fishes. Pollution increases the infection in fishes. Water temperature have a impact on the infection.

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