

# Digenean Trematode Parasites and Cyprinid Fish *Catla catla*

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**Abstract:** Cyprinid fish *Catla catla* is a major carp fish of the water bodies of Jaunpur Uttar Pradesh. It has a great economical value in freshwater fish in India. They are mid water feeder. *Catla catla* is a important fish of polyculture in the ponds. Some time they suffered with helminth infections which damage their outer and inner body parts. In which trematode parasites are major part of helminth infection. In our investigation we were trying to know the burden of digenetic trematode parasites in fresh water fish *Catla catla*. These are commonly known as Bhakur. The infection deteriorate fish quality and quantity. We use ecological parameters to know the burden of infection monthly as well as seasonally. 390 fishes were examined. Total 98 were found infected.

**Keywords:** Trematode parasites & *Catla Catla*

## 1. Introduction

*Catla catla* is a important fish in available edible variety of fishes in water bodies in Jaunpur district. They are largely cultured in the ponds. They are good source of protein and minerals for our daily life. But helminth infection affects their food value. Health of any population depends on the control of disease and maintenance of a healthy relationship between living organism and their environment (Sneieszko 1983). The influence in relation to the length of fish has been described by many workers ( Jha and Sinha 1990, Shomorendra et al. 2005,2007). Besides this Bhuiyan et. al. (2007), Banu et al. (1993). Chandra et al. (1997) worked on seasonal variation in the population of a single helminthes parasites associated with a particular host fish. There are a number of helminthes parasites which are transmitted to human beings only through fish (Gupta 1959). These parasites use the fish for their shelter and food and destruct every organs resulting in pathogenic effects (Dogiel 1958). Parasites interfere with the nutrition, metabolism and secretory function of alimentary canal, damage nervous system (Markov 1961). To Reaching this long term objective will depend on the detailed information and knowledge on the ecology of main disease threads ( karvonen et al 2005). A Pathoanatomical Limnological study of Argulosis in Indian Major Carps in freshwater (Samir 2007). Study on parasites of Exotic Carps (Majumder, 2011) Risk factors, management issues and economic impacts of diseases on carp aquaculture (Vineetha et al. 2009). Ayyappan (2014) reported that aquaculture in India is almost synonymous to carp culture and alone contributes to more than 80% of the total aquaculture production of the country. Distribution of helminth parasites in different Size group and organs of fish (D' Silva et al. 2012). Prevalence of helminth parasites infecting *Channa punctatus* (Kundu I. et al. 2015).

Prevalence of parasitic infection in the fresh water fishes (Sarmin et al 2018). Studies on digenetic trematode parasites in fresh water carnivorous fish of jaunpur (Singh et al. 2018). Presence of digenetic trematode parasites of cypriniformes fish *Labeo rohita* ( Mishra et al. 2019). In our study we found out different ecological aspects in cyprinid fish *Catla Catla*.

## 2. Research Material and Methods

The Collection of the living fish samples of all size, sex, weight from different study center of Sai River and ponds (Bargudhar ghat, Fattupur ghat, Khampur ghat ,Gujar tal and some local ponds of study area) .Our study period was between January to December 2018. All specimens were brought to the laboratory in a plastic container and put in a glass aquaria. Fishes are measured by standard protocol (Paperna 1996). The dissecting animal were examined through all the internal parts of the fish. Then we fix the trematodes in 10% formalin followed by borax carmine. Washing the material with distilled water using ascending grades of alcohol for dehydration .After the dehydration the specimens mounted in DPX. Helminthes parasites were identified up to class level on the basis of available taxonomical character as described ( Yamaguti 1958, 1961,1963). We used the formulae proposed by ( Morgolish et al. 1982), formula for prevalence ,abundance ,mean intensity, infestation index and Dominant % .

## 3. Research Findings

Total 390 fishes were examined during experiment. Different aspects were shown in the following tables –

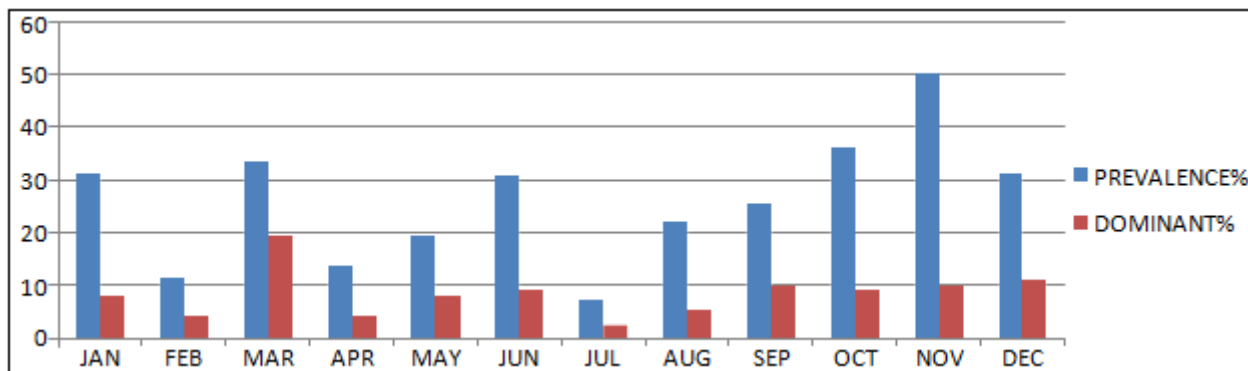
**Table 1:** Monthly variation of different ecological parameters

Month	Number Of Host Examined	Number Of Host Infected	No. Of Parasites Recovered	Prevalence %	Mean Intensit Y	Abundance	Dominant %	Infestat Ion Index
JAN	29	9	13	31.04	1.45	0.45	7.88	0.13
FEB	35	4	7	11.43	1.78	0.20	4.24	0.02
MAR	39	13	32	33.33	2.47	0.83	19.40	0.27
APR	22	3	7	13.64	2.34	0.32	4.25	0.04
MAY	36	7	13	19.45	1.86	0.33	7.88	0.07

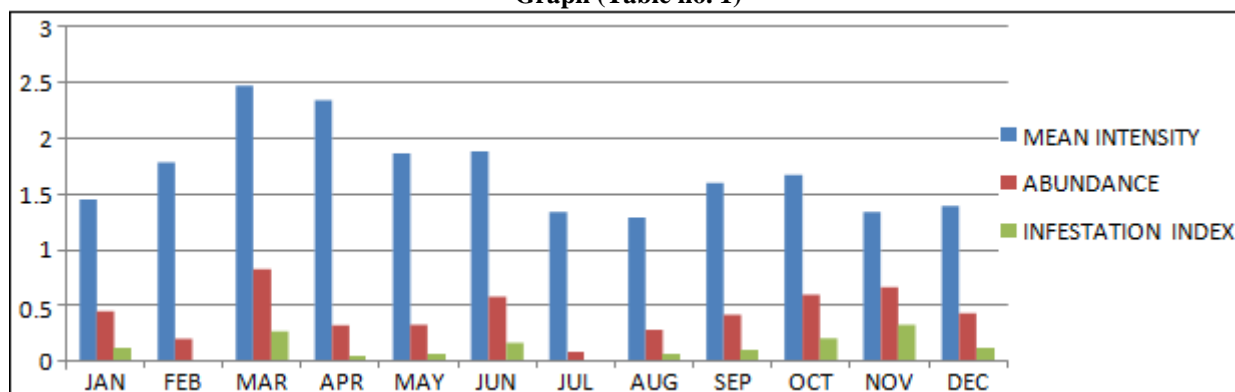
JUN	26	8	15	30.77	1.88	0.58	9.09	0.17
JUL	41	3	4	7.32	1.34	0.09	2.43	0.007
AUG	32	7	9	21.88	1.29	0.28	5.46	0.06
SEP	39	10	16	25.65	1.6	0.42	9.70	0.10
OCT	25	9	15	36	1.67	0.60	9.10	0.21
NOV	24	12	16	50	1.34	0.67	9.70	0.33
DEC	42	13	18	30.96	1.39	0.43	10.90	0.13

**Table 2:** Seasonal variation in different ecological parameters

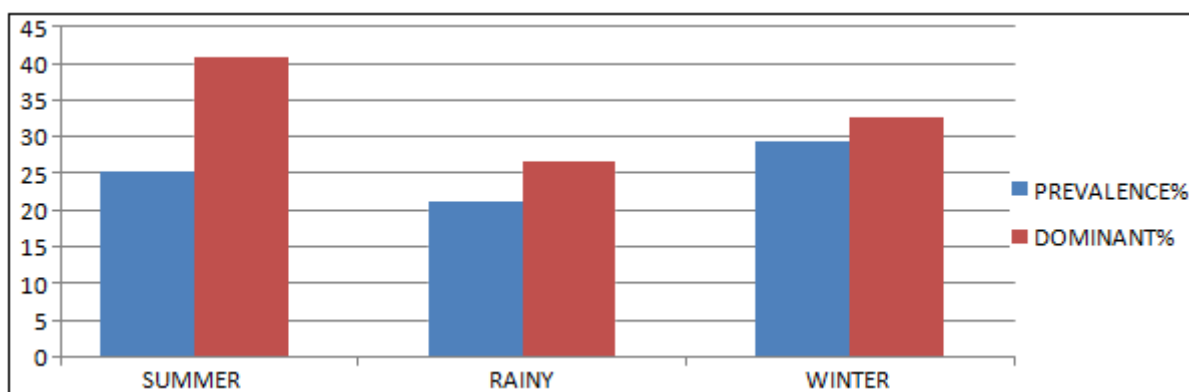
Season	No. of Host Examined	No. of Host Infected	No. of Parasites Recovered	Prevalence (%)	Mean Intensity	Abundance	Dominant (%)	Infestation Index
Summer	123	31	67	25.20	2.16	.54	40.66	.13
Rainy	137	29	44	21.16	1.51	.32	26.66	.06
Winter	130	38	54	29.23	1.42	.41	32.72	.12



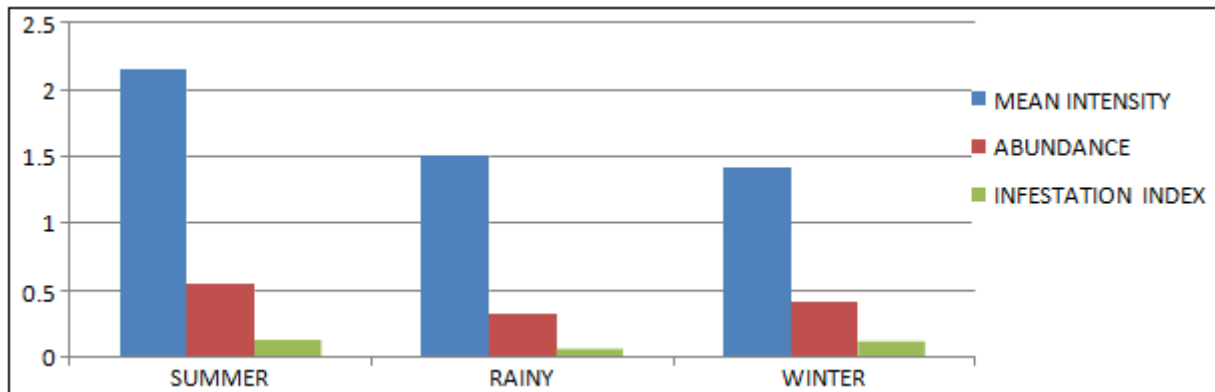
Graph (Table no. 1)



Graph (Table no. 1)



Graph (Table no. 2)



Graph (Table no. 2)

In our experiment we found 98 samples were infected in which 165 parasites were recovered.

#### 4. Conclusion

In our present experiment we reach the conclusion that the infection of fishes were affected both monthly and seasonally. As mentioned there are various ecological factors affect the fresh water hosts of water bodies. By preventing infections we secure their food value. We should need to aware the people about the fish infection and their preventing procedure. It is very important to prevent the infectious agent found in fishes for their economic value.

#### References

- [1] Dogiel V.A.(1958):Ecology of fresh water fishes ,parasitology of fishes trans. By Kabada. Z.(1961),Oliver and Boyd, Edinbergh 1958,pp.1-47.
- [2] Yamaguti S.(1958) : Systema helminthum, vol 1. The digenetic trematodes of vertebrates . NewYork: interscience publication ;1958.P.214.
- [3] Gupta,SP.,(1959): Nematode parasites of vertebrates of east Pakistan iii. Camallanidae from fishes , amphibia and reptiles .can.J.Zool.,87:771-779.
- [4] Yamaguti S.(1961): Systema helminthum, vol 3. The nematode of vertebrates NewYork: interscience publication;1961.P.261.
- [5] G.S.Markov, physiology of fish parasites.In: Dogien VA, Petrushevesky GK,Polyansky Y.I. (1961): parasitology of fishes Edinbergh and London: Oliver and Boyd, PP.117-139,1961 .
- [6] Margolis L.,G.W.Esch, J.C.Holmes, A.M. kuris and G.A Schad(1982) : the use of ecological terms in parasitology ( report of an Ad hoc committee of the American society of parasitologists ) J.Parasit. 68:131-133.
- [7] Snieszko SF.diseases of fishes(1983) : research and control fisheries 1983;8:20-22 .
- [8] Jha AN,Sinha P.(1990) : The occurrence of helminth parasite in relation to size of fish.bio J.1990;2(11):311-316.
- [9] Banu A.N.H. ,Hossain M. A.,Khan , M.H.,(1993): Investigation into the occurrence of parasites in carps,catfish, tilapia.Prog. Agric.1993;4:11-16.
- [10] Paperna I .(1996):Parasites,infections and diseases of fishes in Africa –and update, CIFA technical paper number 31, Rome , FOA,220p.Petrushevesky and Yu, I.Poluansky eds.english translation by Z.Kobata.,Oliver and Boyd.
- [11] Chandra KJ,Islam KZ, Wotten R.(1997): Some aspects of association and development of *Lytocestus indicus* Moghe in cat fish , *Clarias batracus*.Bangladesh J Fish Res. 1997;1:31-38.
- [12] Shomorendra M,Jha An,Kumar P.(2005) :Seasonal occurrence of helminth parasite Loktak lake ,Manipur. Uttar Pradesh J Zool.2005;25(1):23-27.
- [13] Anssi Karvonen,Otto Seppala and E Tellervo Valtonen.(2005): Impaired crypsis of fish infected with a tropically transmitted parasites Gournal:animal behaviour vol.(70) I(4)p.895-900.
- [14] Shomorendra M,Jha AN,Kumar P (2007) :Effect of length of fish on the occurrence of helminth parasite. Uttar Pradesh J Zool.2007;27(1):87-91.
- [15] Bhuiyan AS,Akther S,Musa GN,(2007) :Occurance of parasites in *Labeo rohita* (Ham.) from Rajshahi Uni J Zool Rajshahi Uni.2007;26:31-34.
- [16] S.Samir.A pathoanotomical and limnological study of argulosis in Indian major carps in the fresh water Bheries of West Bengal, (2007): M. F.sci.thesis,west Bengal uni. of Animal and Fisheries Sciences, Kolkata 91p,2007. 17-
- [17] Vineetha P.,Abraham T.J.(2009).Risk factors ,management issues and economic impacts of disease on carp aquaculture in Andhra Pradesh J.Rural Development,28(2):249-263.
- [18] Majumder, (2011). Study on parasites of exotic carps in south 24 paraganas of West Bengal, M. F.sci.thesis,West Bengal uni. of Animal and Fisheries Sciences, Kolkata 143p,2011.
- [19] D'silva J.,Bhuiyan AI and Bristow GA(2012) : Distribution of helminth parasites in size group and organs of *Hilsa shad* , *Tenulosa ilisa*. Dhaka uni..J.biol. sci, 21(1),55-65(201 2).
- [20] Ayyappa, S.(2014).National Aquaculture Sector Overview. India Fact Sheets.In: FAO Fisheries and Aquaculture Department (online).Rome .Updated 4 April 2014.(Cited February 2017).
- [21] Kundu I,Bandyopadhyay P.K.,Mandal D.R.(2015):Prevalence of helminth parasites infecting *channa punctatus* bloch, 1793 from Nadia district of W.B. journal of agriculture and veterinary science 8:41-46.
- [22] Singh .Prashant . Misra D.B. and Singh H.S.(2018): Studies on digenetic trematode parasite in fresh water carnivorous fishes of Jaunpur. Int.J.of science and research (2018) 7.(10):2319-7064.

- [23] Sarmin Akther, Emrul Hakkani, Ashadyzzaman and Monikrishna Mohanta ( 2018) : Prevalence of parasitic infections in the fresh water fish *channa punctatus* (Bloch) from Rajshahi metropolitan., Bangladesh int. J.curr.microbiol, app.sci.(2018)7(4):3431-3441.
- [24] Mishra A., Singh P., Mishra DB and Singh HS (2019): Presence of digenetic trematode parasites of cypriniformes fish *Labeo rohita*. IJSR, vol (8) I(2) ISSN:2319-7064.