



## STUDIES ON PREVALENCE OF CESTODE PARASITES OF FRESHWATER FISH *MASTECSEMBALUS ARMATUS* (L.) IN JAYAKWADI DAM, PAITHAN

Dr. satish Saraf

Department of Zoology, Pratishan Mahavidhyalaya Paithan, Dist. Aurangabad.

**ABSTRACT** The present investigation deals with the preliminary survey of cestode parasites such as *Senga* sp. and *Circumoncobothrium* sp, collected from the intestine of a *Mastecembalus armatus* in Jayakwadi dam, Paithan, Aurangabad district (M.S.) India during June, 2016 to May, 2017. The high incidence of infection of all these species *Senga* sp. and *Circumoncobothrium* sp, was recorded in summer season (71.43% and 67.86% respectively) followed by winter season (59.38% and 59.38% respectively) whereas infection was low in monsoon season (40% and 36% respectively). The results of present study clearly indicate that environmental factors and feeding habitat influence the seasonality of parasitic infection either directly or indirectly.

**KEYWORDS :** *Circumoncobothrium* sp., *Mastecembalus armatus*, Paithan, *Senga* sp.

### INTRODUCTION

Parasites are extremely abundant and diverse in nature, representing a substantial portion of global biodiversity. Fishes are important components of ecosystem from ecological, medicinal, nutritional and economical point of view. These fishes are parasitized by helminth parasites, which reduce the food value of host fish. Study of helminth parasites is therefore an urgent necessity today. Helminth infections are very common in people who consume improperly cooked meat, unhygienic habits and poor sanitation. These helminthic infection leads to various disorders i.e. anemia. Population investigation is necessary to provide data for the prediction of integrated methods to achieve the regulation of numbers of harmful parasites (Kennedy, 1974, 1976), Notable contribution made by Dobson (1994), Dogiel et al. (1935, 1958), Euzebey (1972), Anderson (1976), Moller, H (1978) and Rajeshwar Rao (1982).

Infections caused by various pathogens among fishes in natural and Man-made culture systems are harmful for fish health, growth and fishery Industry. Population dynamics of parasite increases rapidly and results in fish mortality because of PIHM (Parasite induced host mortality) and thus fish population infected firstly (Arora, 2010). The parasitic infections are sometimes very fatal and cause high mortalities when their life cycles are well supported by intermediate hosts. (Shakir, 2006)

Results of present study, therefore, are expected to be helpful for future research on piscian cestodes in this region. Keeping in view, the importance of these Piscean cestode parasites, present study was undertaken to investigate and evaluate prevalence of cestode parasites of freshwater fish *Mastecembalus armatus* and distribution of two piscean cestodes of genus *Senga* sp. and *Circumoncobothrium* sp, collected during annual cycle June, 2016 to May, 2017.

### MATERIAL AND METHODS

The fresh water fish's intestine were collected in Jayakwadi dam during June, 2016 to May, 2017. The various organs of the viscera such as stomach, intestine, liver and caecum were kept in separate petri dishes containing normal saline. The organs observed and recorded the data of infected and normal hosts examined. After separating and counting the population of different Cestode parasites from fresh water fishes, the parasites were preserved in separate bottles. Some of these were used for the taxonomic study.

Prevalence of infection calculations were based on the following formulae

**Prevalence of infection-** It is the percentage of host infected by particular species of cestode parasites. Observations are recorded annually and calculated by the following formula.

$$\text{Incidence of Infection} = \frac{\text{Infected hosts}}{\text{Total hosts examined}} \times 100$$

### RESULT AND DISCUSSION

The present investigation indicates that prevalence of cestodes are presented in Table No. 1 and Table No. 2. Two species of cestode parasites was recorded as *Senga* sp. and *Circumoncobothrium* sp. It

was found that, high incidence of infection of all these species were recorded in summer (71.43% and 67.86%) followed by winter (59.38% and 59.38%) whereas infection was low in monsoon season (40% and 36%).

According to the Kennedy (1971, 1975 and 1977) and Rodhe (1993) the temp, humidity and rainfall, feeding habits of host, availability of infective host and parasite maturation, such factors are responsible for influencing the parasitic infections. Experimental studies by Kennedy (1971) have shown that the cestode *Caryophyllaeus lattices* can establish in fish and survive for longer period at low temperature. Hence he explained the temperature is major controlling seasonal periodicity of infection. Rodhe, 1993 explained the temperature controls parasitization. He explained the infections are more in warm seas than in old ones. Jadhav, (1976, 2005 and 2006) explained the development of parasites should be needed high temperature, low rainfall and sufficient moisture. Hence the high prevalence occurs in summer followed by other season. Pennuyuick (1973), reported fishes and other animals were infected with large number of parasites in late winter to end of summer months, as environmental conditions are favorable in these months. Jadhav and Bhure, (2006) reported high temperature, low rainfall and sufficient moisture are necessary for development of parasite.

The parasitic infection is greatly influenced by the season, which basically interferes with ecology and physiology of the fish, (Rahman and Jahan, 2002). The parasites causes depletion of the nutritional contents in host's body and results in the low productivity, loss in fish industry (Hiware, 1999) The infection was more during summer, moderate during winter and low during the rainy season (Reddy 2011). In the present study the high infection of *Mastecembalus armatus* occurs in summer months, and *Senga* and *Circumoncobothrium* infects to in high temperature.

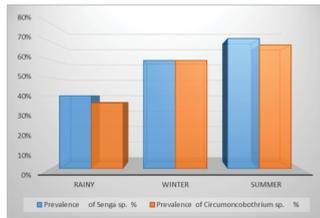
**Table No.1:-Prevalence of *Senga* sp. of *Mastecembalus armatus* during June, 2016 to May, 2017.**

Season	No. of hosts Examined	No. of hosts Infected	No. of parasites collected	Prevalence %
Rainy	25	10	13	40%
Winter	32	19	25	59.38%
Summer	28	20	30	71.43%

**Table No.2:-Prevalence of *Circumoncobothrium* sp. of *Mastecembalus armatus* during June, 2016 to May, 2017.**

Season	No. of hosts Examined	No. of hosts Infected	No. of parasites collected	Prevalence %
Rainy	25	9	12	36%
Winter	32	19	23	59.38%
Summer	28	19	22	67.86%

**Graph No1:-Prevalence of *Senga* sp. and *Circumncobothrium* sp. of *Mastecembalus armatus* during June, 2016 to May, 2017.**



### CONCLUSION

After the analysis of data the present study can be concluded that the high infection of Ptychobothridean cestode parasites i.e. *Senga* sp. and *Circumncobothrium* sp. (incidence, intensity, density and index of infection) are occurred in summer season followed by winter where as low in monsoon season. This type of results indicated that environmental factors and feeding habitat are influencing the seasonality of parasitic infection either directly or indirectly.

### REFERENCES

- Anderson R. M., 1976. Seasonal variation in the population dynamics of Caryophyllacus lacticeps. Parasitology 1976; 72:281-395.
- Dhanraj Balbhim Bhure and Sanjay Shamrao Nanware, 2014. Studies on prevalence of cestode parasites of freshwater fish, Channa punctatus. Journal of Entomology and Zoology Studies 2014; 2 (4): 283-285.
- Dobson A. P, Roberts M. G., 1994. The population dynamic of parasitic Helminth Communities. Parasitology 1994; 102(Suppl.):507-510.
- Dogiel VA et al., 1958. Parasitology of Fishes. Leningrad University press, Oliver and Boyd, Edinburgh and London 1958.
- Dogiel VA., 1935. The present tasks of ecological Parasitology. Tud Paterg of Biol Inst 1935; 15:2.
- Hiware C. J., 1999. Population dynamics of the Caryophylla cestode parasitizing fresh water Air breathing predatory fish Clarias bataracus, Linnaeus Revista Di. Parasitologia XIX (LXIII):1.
- Hiware CJ, Jadhav BV, Mohekar AD., 2003. Applied Parasitology a practical manual Mangal Deep Publ. Jaipur. 2003, 243.
- Jadhav BV, Bhure DB., 2006. Population dynamics of Helminth parasites in freshwater fishes from Marathwada region (M. S.) India. Flora and Fauna an International Research Journal 2006; 12(2):143-148.
- Kennedy CR, Hine DM. 1970. Population biology of the cestode Proteocephalus torulosis (Bat Sch) in dace Leuciscus leuciscus (L) of the river Avon. Jr Fish Biol 1970; 1(3):209-219.
- Kennedy CR., 1974. A checklist of British and Irish freshwater fish parasites with notes on their distribution. J fish Biol 1974; 6(5):613-644.
- Kennedy CR., 1976. Ecological aspects of Parasitology. North Holland publishing company Amsterdam 10x ford, 1976.
- Kennedy CR., 1977. The regulation of fish parasite populations. In regulation of parasite population 1977(a); 61-109.
- Khalil LF, Jones A, Bray RA., 1994. Keys to the cestodes parasites of vertebrates. CAB International Pub. U.K. 1994, 1-751.
- Nidhi Arora, 2010. Population dynamics of caryophyllid cestode Lytocestus fossilisi (gupta, 1961) from Clarias batrachus in meerut (U.P.). J. Env. Bio-Sci., Vol. 24 (1): 99-101.
- Pennyuick KL., 1973. Seasonal variation in the parasite population of three spined Stickle backs, Gasterosteus aculeatus L. Parasitology 1973; 63:373-388.
- Rahman, M. R. and Jahan, M.S., 2002. Consequences of Larval Helminth Infecting Freshwater Gastropods. Bangladesh J. Zool. 30(2), 101-114.
- Rao R, Ramkrishna V., 1982. The seasonal variations of Helminth Parasites of Rana tigrina in Hyderabad district. Geobios 1982; (10):34-36.
- Reddy Yogesh, 2011. Seasonal analysis of cestode parasite, Lytocestus indicus in fresh water fish, Channa striatus: The Asian Journal of Animal Science, (1): 39-42.
- Schmidt Gerald D., 1934. Handbook of Tapeworm Identification. CRC Press, Inc. Boca Raton, Florida, 1934, 1-675.
- Shakir, 2006. The prevalence of cestode infection in a freshwater catfish, Sperata sarwari Punjab Univ. J. Zool., Vol. 21 (1-2), pp. 41-47.
- Wardle RA, Mcleod JA, Radinovsky, 1970. Advances in the Zoology of tapeworm 1950-1970, University of Minnesotar Press, Minneapolis, 1974, 1-780.
- Yamaguti S., 1959. Systema Helminthum. II. The Cestodes of Vertebrates. Inte. science Publ., N.Y. 1959, 860.