

FLORA AND FAUNA

2015 Vol. 21 No. 1 PP 31-36

ISSN 0971 - 6920

## INCIDENCE OF INFECTION OF CESTODE GENUS *SENGA*<sup>15</sup> PARASITIC IN FRESHWATER FISH *MASTACEMBELUS ARMATUS*<sup>25</sup>

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**Received** : 17.1.15.; **Accepted** : 19.3.15

### ABSTRACT

The present investigation deals with the incidence of infection of cestode *Senga microrostellata*<sup>10</sup> parasitizing of *Mastacembelus armatus*<sup>25</sup> from different localities of Latur District (M.S.) India. The high prevalence of cestode parasites occurred in summer (80.00 %) followed by winter (52.50 %) whereas infection was low in monsoon (37.50%).

Figures : 04

References : 34

Table : 01

KEY WORDS : Incidence of infection, Latur, *Mastacembelus armatus*<sup>25</sup>, *Senga microrostellata*<sup>10</sup>.

### Introduction

Fishes are important components of ecosystem from ecological, medicinal, nutritional and economical point of view. These fishes are parasitized by helminth parasites, which reduce food value, as they provide highly nutritious food. Parasitic diseases are among major public health problems of tropical countries including India. They infect man and also invade domestic animals and wildlife. Notable contributions made in population dynamics of helminth parasites by earlier researchers<sup>1-4,12-14,19-23,26-29</sup>. Less work has been done on helminth parasites of *Mastacembelus armatus* in this region. Results of present study, therefore, are expected to be helpful for future research on helminth parasites of freshwater fishes in this area. Keeping in view, importance of these

cestode infections of freshwater fish, the present study was designed to evaluate the prevalence of Cestode genus *Senga*<sup>15</sup> parasitizing freshwater fish *Mastacembelus armatus*<sup>25</sup>.

### Materials and Methods

In this study, intestines of *Mastacembelus armatus*<sup>25</sup> were examined for Cestode infection during the period of October, 2013 to September, 2014 from different localities of Latur District, Maharashtra State India. Cestodes were collected, preserved in hot 4% formalin, dehydrated in various alcoholic grades, stained with Borax carmine, cleared in xylene and mounted in D.P.X. These cestodes were prepared for identification by standard methods<sup>5,17,24,31,32,34</sup>. On taxonomic observations identified cestode was *Senga microrostellata*<sup>10</sup>. Obtained data were recorded;

**ACKNOWLEDGEMENTS** : The authors are indebted to Dr. N.V. Kalyankar, Principal, Yeshwant Mahavidyalaya Nanded for the kind help, inspiration and providing necessary laboratory facilities. DBB is indebted to SERB, New Delhi for sanctioning Fast Track Research Project No. SR/FT/LS-19/2010 Dt. 2nd May, 2012.



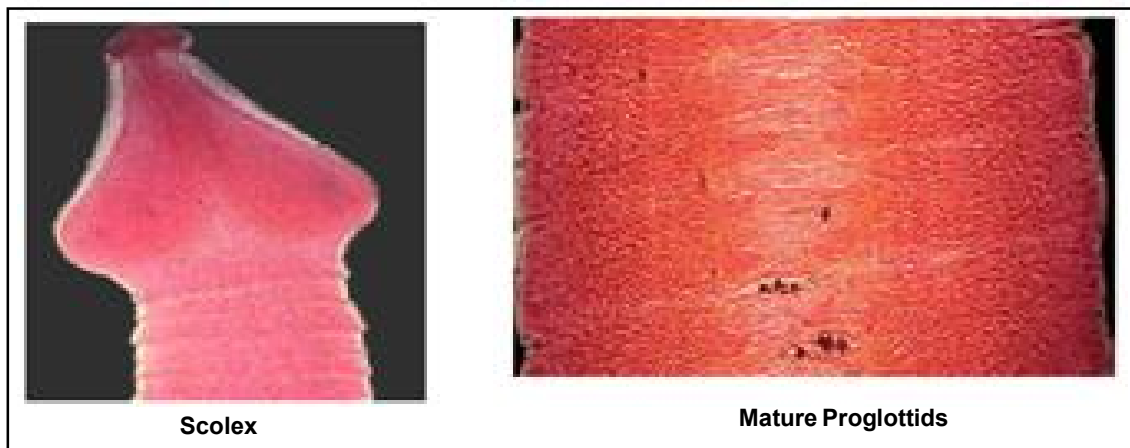
Fig. 1 : Freshwater fish *Mastacembelus armatus*

processed for study of incidence of infection.

### Results and Discussion

Results of the studies on incidence of infection of cestode, *Senga microrostellata*<sup>10</sup> from *Mastacembelus armatus*<sup>25</sup> are presented in Table No. 01 & Graph 1. The incidences of infection of *Senga microrostellata*<sup>10</sup> were recorded in summer (80.00 %) followed by winter (52.50 %) whereas infection was low in monsoon (37.50%). It was reported that temperature; humidity, rainfall, feeding habits of host, availability of infective host and parasite maturation were responsible for influencing the parasitic infections<sup>22</sup>. Feeding activity of the host is reason for seasonal fluctuation of infections<sup>28</sup>. Retarded growth, decreased egg production, reduced weight gain, significant haemoglobin depression are due to infections of cestode parasites in chickens<sup>27</sup> noticed high temperature, low rainfall and sufficient moisture were necessary for development of parasite<sup>18</sup>.

Results of present study are in agreement with the earlier that reported high incidence (51.78%), intensity (1.18%) and density (0.613%) of *Rhabdocona* sp. in summer followed by winter and rainy season<sup>6</sup>. Prevalence of parasites in the Indian Major Carp, *Labeo rohita* (Hamilton) in Rajshahi, Bangladesh and highest prevalence (75%) and mean density (10.44) of parasites were found in the month of December and lowest (20%) in the month of February<sup>16</sup>. Prevalence<sup>30</sup> of Chicken Cestodiasis in Egypt was highest in summer 5.54% and autumn 5.6% and lowest incidence during winter 3.3% and spring 2.2%. Seasonal variation of Caryophyllidean tapeworms, showed maximum infection in winter (71.66%) followed by summer (43.33%) whereas lower infection in monsoon<sup>7</sup> (15.00%). There<sup>8</sup> was high incidence of infection of *Cotugnia dignopora*, *Cotugnia diamarae* and *Raillietina (R.) domestica* in summer (75%, 67.85 % & 71.42%) followed by winter (60%, 52 % & 48%) whereas low infections in monsoon season



Scolex

Mature Proglottids

Fig. 2 : Micro-photographs of *S. microrastellata*<sup>9</sup>.

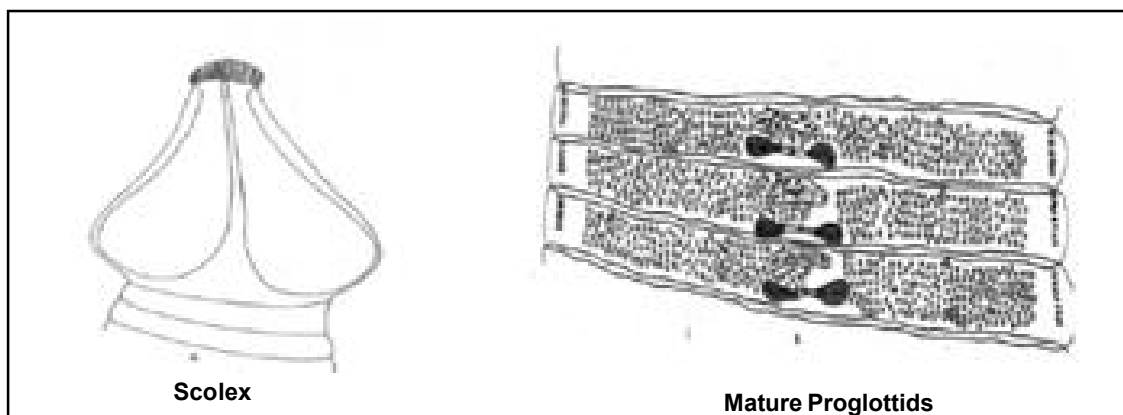


Fig. 4 : Camera lucida diagram of *S. microrastellata*<sup>9</sup>.

TABLE- 1 : Incidence of infection of *Senga microrastellata*<sup>10</sup> from *Mastacembelus armatus*<sup>25</sup> during October, 2013 to September, 2014.

Seasons	Number of host Examined	Number of host Infected & their Prevalence	Number of parasites collected
Winter (Oct.,2013- Jan., 2014)	40	21 (52.50 %)	28
Summer (Feb.,2014-May,2014)	40	32(80.00 %)	41
Monsoon (June, 2014 –Sept., 2014)	40	15 (37.50%)	19

(38.09%, 33.33% & 38.09%). There<sup>9</sup> was high incidence of infection of *Senga sp.*, *Gangesia sp.*, *Proteocephalus sp.* infected to *Channa sp.* in summer (76.66 %, 73.33 % & 70.00 %) followed by winter (65.21 %, 52.17% & 56.52%) whereas infection was low in monsoon (36.84%, 26.31% & 31.57%). There was prevalence of helminth parasites of freshwater fish *Mastacembelus armatus* in Nanded Region and high incidence of infections were recorded in summer (Feb., 2014-

May, 2014) followed by winter (Oct., 2013- Jan., 2014) where as low in monsoon<sup>11</sup> (June, 2013 – Sept., 2013).

Recorded data of present study show high incidence of infections of cestodes in summer followed by winter whereas low in monsoon due to environmental factors and feeding habitat influence of the seasonality of parasitic infection either directly or indirectly.

### References

1. ANDERSON, R.M. (1976) Seasonal variation in the population dynamics of *Caryophyllacus lacticeps*. *Parasitology* **72**: 281-395.
2. ANDERSON, R.M. AND MAY, R.M. (1978A) Regulation and stability of the host parasite population interaction. I- Regulation process. *Jr. Animal. Ecol.* **47**(1): 219-247.
3. ANDERSON, R.M. AND MAY, R.M. (1978B) The regulation of the host population growth by parasite species. *Parasitology* **76**: 199-157.
4. ANDERSON, R.M. AND GORDON, D.M. (1982) Processes influencing the distribution of parasite numbers within host population with special emphasis on parasite-induced host mortalities.

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*Parasitology* **85**: 373-398

5. BHURE DHANRAJ BALBHIM (2008) Faunal diversity of helminth parasites of freshwater fishes from Maharashtra State, India. *Ph.D. Thesis, Dr. B. A.M.U.Aurangabad, M.S.India.* 1-178.
6. BHURE, D.B., NANWARE, S.S., KARDILE, S.P. AND DHONDGE, R. M. (2010) A survey of the population ecology of *Rhabdochona ralliet*, 1916 (Nematoda-Rhabdochonidae) from *Labeo rohita* (Ham. and Buch.). *The Ecosphere* **1**(1):12-24.
7. BHURE, DHANRAJ BALBHIM, NANWARE, SANJAY SHAMRAO, BARSHE, M.U., DESHMUKH, V.S. AND KARDILE, S.P. (2013) Population Dynamics of Caryophyllidean Tapeworms from Freshwater Fish *Clarias batrachus*. *Flora and Fauna.* **19** (1) 161-166.
8. BHURE, DHANRAJ BALBHIM, NANWARE, SANJAY SHAMRAO AND KASAR C.R. (2014) Studies on prevalence of Cesodes Parasitizing *Gallus gallus domesticus*. *Environment Conservation Journal.* **15** (1&2) 171-175.
9. BHURE, DHANRAJ BALBHIM AND NANWARE, SANJAY SHAMRAO (2014) Studies on prevalence of Cestode Parasites of Freshwater Fish, *Channa punctatus*. *Journal of Entomology and Zoology Studies.* **2**(4) 283-285.
10. DHANRAJ BALBHIM BHURE, SANJAY SHAMRAO NANWARE AND VIKRAM SATWARAO DESHMUKH (2014) Biosystematic studies on Cestode genus *Senga* (Dollfus, 1934) (Ptychobothridae, Luhe, 1902) from *Mastacembelus armatus* with description of a new species. *Proceeding: Modern Parasitology, Narendra Publishing House, Delhi. International Conference on Recent Trends in Climate Change Researches vis-a-vis Biodiversity* **1** 233-244. ISBN-13: 9789382471622.
11. D. B. BHURE, S. S. NANWARE, V. S. DESHMUKH AND KANCHAN GAIKWAD (2014) Prevalance Of Helminth parasites Of freshwater fish, *Mastacembelus armatus* Lacepède, 1800. Proceeding of State Level Symposium on "Opportunities & Challenges in Inland Fisheries Development in Maharashtra". Organized by Department of Fishery Science, NES Science College, Nanded-431605; Published as a Special Issue of *Journal of Science Information* **9** (Special Issue: 9), August, 2014 29-34.
12. DOBSON, A.P. AND ROBERTS, M.G. (1994) The population dynamics of parasite helminth communities. *Parasitology* **102** (Suppl.): 507-510.
13. DOGIEL, V.A. (1935) The present tasks of ecological parasitology. *Tud. Patergof. Biol Inst* 15:2
14. DOGIEL, V.A. ET AL. (1958) *Parasitology of fishes*. Leningrad University press, Oliver and Boyd, Edinburgh and London.
15. DOLLFUS, R. PH. (1934) Sur un cestode pseudophyllidae parasite de poisson ornement. *Bull. Sac. Zool. France* **69**: 476-490
16. FARHADUZZAMAN, A.M., MANJURULALAM, M., HOSSAIN MOSHARROF, M. AFZAL HUSSAIN AND MD. HABIBUR RAHMAN (2010) Prevalence of parasites in the Indian major Carp, *Labeo rohita* (Hamilton) in Rajshahi, Bangladesh. *Univ. Jr. Zool. Rajshahi. Univ.* **28**: 65-68
17. HIWARE, C.J., JADHAV, B. V. AND MOHEKAR, A. D. (2003) *Applied Parasitology A practical manual*. Mangal Deep Publ. Jaipur. 243
18. JADHAV, B.V. AND BHURE, D.B. (2006) Population dynamics of Helminth parasites in freshwater fishes from Marathwada region (M. S.) India. *Flora and Fauna* **12**(2): 143-148.
19. KENNEDY, C.R. (1968) Population biology of the Cestode *caryophyllaeus* (Pallas, 1781) in dace, *Leuciscus leuciscus* L. of the river Avon. *J. Parasitol* **54**: 538-543.
20. KENNEDY, C.R. AND HINE, D.M. (1970) Population biology of the cestode *Proteocephalus torulusus* (Bat Sch) in dace *Leuciscus leuciscus* (L) of the river Avon. *J.Fish Biol.* **1**(3): 209-219.
21. KENNEDY, C.R. (1974) A checklist of British and Irish freshwater fish parasites with notes on their distribution. *J. fish Biol.* **6** (5): 613-644.

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22. KENNEDY, C.R. (1976) *Ecological aspects of parasitology*. North Holland publishing company Amsterdam 10x ford.
23. KENNEDY, C.R. (1977A).The regulation of fish parasite populations. In regulation of parasite population 61-109.
24. KHALIL, L.F, JONES, A. AND BRAY, R.A. (1994) *Keys to the cestodes parasites of vertebrates*. CAB International Pub. U.K. pp.1-751.
25. LACEPEDE(1800) National Museum of Natural History, Washington, D.C., *Mastacembelus armatus*.
26. MOLLER, H. (1978) The effect of salinity and temperature in the development and survival of fish parasites. *J. of Fish Bio.* **12**: 311-324.
27. NAIR, K.V. AND NADAKAL, A. M. (1981) Hematological changes in domestic fowl infected with cestode *Raillietina tetragona* (Molin, 1958). *Vet. Parasitol.* **8**: 49-58.
28. PENNYUICK, K.L. (1973) Seasonal variation in the parasite population of three spined Stickle backs, *Gasterosteus aculeatus* L. *Parasitology* **63**:373-388.
29. RAJESHWAR RAO AND V. RAMKRISHNA. (1982) The seasonal variations of Helminth Parasites of *Rana tigrina* in Hyderabad district. *Geobios* **10**: 34-36.
30. SHAHIN, A.M., LEBDAH, M.A., ABU-ELKHEIR, S. A. AND ELMELIGY, M.M. (2011) Prevalence of Chicken Cestodiasis in Egypt. *New York Science Journal*; **4**(9):21-29.
31. SCHMIDT, GERALD D. (1934) *Handbook of Tapeworm Identification*. CRC Press, Inc. Boca Raton, Florida. 1-675.
32. WARDLE, R.A., MCLEOD, J.A. AND RADINOVSKY (1974) *Advances in the Zoology of tapeworm 1950-1970*, University of Minnesotar Press, Minneapolis 1-780.
33. WOODLAND, WNF (1924) On a new Proteocephalidae from Indian freshwater fishes. *Parasit.* **16**: 441-451.
34. YAMAGUTI, S. (1959). *Systema Helminthum. II. The Cestodes of Vertebrates*. Intescience Publ., N.Y., pp 860.