

Incidence of infection of trematode genus *Azygia looss*, 1899 parasitic in freshwater fish *Channa punctatus*

Sushma Pallewad¹, Sanjay Shamrao Nanware^{2*} and Dhanraj Balbhim Bhure³

¹Department of Zoology, Lal Bahadur Shastri Mahavidyalaya, Dharmabad Dist. Nanded (M.S., India).

^{2,3} Research and Post Graduate Department of Zoology, Yeshwant Mahavidyalaya, Nanded-431602 (M.S., India)

E-mail: : snanware@rediffmail.com

ABSTRACT

The present investigation deals with the incidence of infection of Trematode *A. angusticauda* by Stafford, 1904 parasitizing of *Channa punctatus* from different localities of Nanded District (M.S.) India during February, 2014 to January, 2015. The high prevalence of trematode parasites were occurred in Summer (79.16 %) followed by Winter (62.50 %) whereas infection was low in monsoon (39.58%).

Keywords: *A. angusticauda* Stafford, 1904, *Channa punctatus*, Incidence of infection, Nanded

INTRODUCTION

Helminth parasite infection are among the most common parasitic infection of humans worldwide and are now well recognized as an important public health problem both in developing and developed countries. Fish play an important role in economy. Mortality of fishes occurs due to heavy infestation of helminth parasites. Notable contribution made in population dynamics of helminth parasites by Dobson, (1961 & 1965); Dogiel et. al., (1954); Johnson, (1964); Anderson, (1974); Kenddey, (1975) & Moller et. al., (1995) Poulin, R. (1995), Rajeshwar Rao (1983) and Rohde, (1993). 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 trematode infections of freshwater fish, the present study was designed to evaluate the prevalence of trematode genus *Azygia* Looss, 1899 parasitizing freshwater fish *Channa punctatus*.

MATERIALS AND METHODS

In the present study, *Channa punctatus*, were examined for Trematode infection during the period of February, 2014 to January, 2015 from different localities of Nanded District, Maharashtra State India. Trematodes 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 Trematodes were prepared for identification by standard methods. On taxonomic observations identified trematode is *A.angusticauda* Stafford, 1904. Obtained data were recorded; processed for study of incidence of infection.

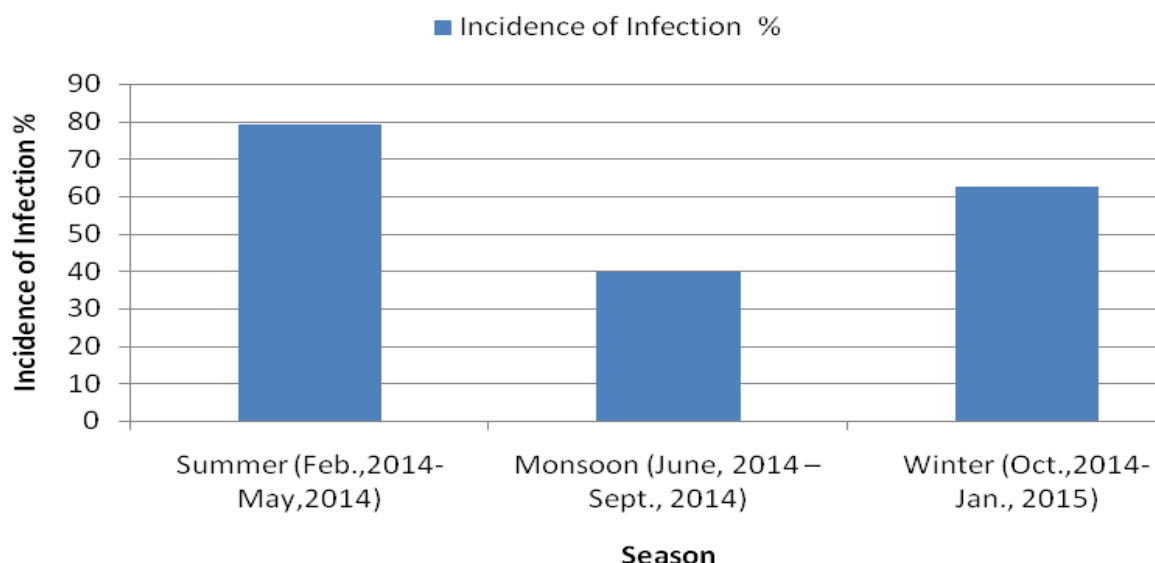
RESULTS AND DISCUSSION

Results of present studies on incidence of infection of cestode, *A.angusticauda* Stafford, 1904 from *Channa punctatus* are presented in Table-1 & Figure-1.

Table-1. Incidence of infection of *A.angusticauda* Stafford, 1904 from *Channa punctatus* during February, 2014 to January, 2015.

Seasons	Number of host Examined	Number of host Infected & their Prevalence	Number of parasites collected
Summer (Feb.,2014-May,2014)	48	38 (79.16 %)	46
Monsoon (June, 2014 –Sept., 2014)	48	19 (39.58%)	24
Winter (Oct.,2014- Jan., 2015)	48	30 (62.50 %)	35

Figure-1. Incidence of infection of *A.angusticauda* Stafford, 1904 from *Channa punctatus* during February, 2014 to January, 2015.



The incidence of infection of *A.angusticauda* Stafford, 1904 were recorded in Summer (79.16 %) followed by Winter (62.50 %) whereas infection was low in monsoon (39.58%).

Kennedy C.R. (1976) reported temperature; humidity, rainfall, feeding habits of host, availability of infective host and parasite maturation are responsible for influencing the parasitic infections. Feeding activity of the host is reason for seasonal fluctuation of infections (Pennuyick, 1973). Nair and Nadakal (1981) explained retarded growth, decreased egg production, reduced weight gain, significant haemoglobin depression due to infections of cestode parasites in chickens. Jadhav and Bhure, (2006) noticed high temperature, low rainfall and sufficient moisture were necessary for development of parasite.

Results of present study are in agreement with Bhure et. al. (2010) reported high incidence (51.78%), intensity (1.18%) and density (0.613%) of *Rhabdocona* sp. in summer followed by winter and rainy season. Farhaduzzaman et.al. (2010) and Laxma Reddy, B and Benarjee, G (2014) studied Prevalence of Parasites in the Indian Major Carp, *Labeo rohita* (Hamilton) in Rajshahi, Bangladesh and noticed 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. Shahin et.al., 2011 studied prevalence of Chicken Cestodiasis in Egypt and reported highest incidence in summer 5.54% and Autumn 5.6% and lowest incidence during Winter 3.3% and Spring 2.2%. Bhure et al., 2013 studied diversity and prevalence of avian cestodes and reported high prevalence in summer where as

low in monsoon season. Bhure et.al. (2013) and Himansu Bhusan Mahananda, (2014) studied seasonal variation of Caryophyllidean tapeworms, which showed maximum infection in winter (71.66%) followed by summer (43.33%) whereas lower infection in monsoon (15.00%). Bhure and Nanware, (2014) reported 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 (38.09%, 33.33% & 38.09%). Bhure and Nanware, 2014 recorded high incidence of infection of *Senga sp.*, *Gangesia sp.*, *Proteocephalus sp.* infected to *Channa sp.* was 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%). Bhure et.al., 2014 studied prevalence of helminth parasites of Freshwater fish *Mastacembelus armatus* from Nanded Region and noticed high incidence of infections were recorded in summer (Feb., 2014-May, 2014) followed by winter (Oct., 2013- Jan., 2014) where as low in monsoon (June, 2013 – Sept., 2013).

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

ACKNOWLEDGEMENTS

The authors express sincere thanks to Dr. N.V. Kalyankar, Principal, Yeshwant Mahavidyalaya Nanded for facilities provided.

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., 1978.** 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., 1978.** 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. *Parasitology* 85: 373-398
5. **Bhure, D.B., Jadhav, B.V., Pathan, D.M. and Padwal, Nitin, 2007.** Population index of some trematode parasites in freshwater fishes from Aurangabad. *Proc. 16th All India ZSI conference, Fisheries and Fish Toxicology.* Chapter -20, pp. 217-229.
6. **Bhure, D.B., Jadhav, S.S., Supugade, V.B., Sawant, A.D. and Jadhav, B.V., 2007.** Population Dynamics of Trematode parasites in freshwater fishes from Nath Sagar reservoir at Paithan Aurangabad District. *Proc. Nat. Work. on Recent. Trends in Biotechnology.* pp120-124.
7. **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 (An International Biannual Journal of Environment and Biological Sciences).* 1(1):12-24.
8. **Bhure, Dhanraj Balbhim, Nanware, Sanjay Shamrao and Dhondge, Ramesh Mohanrao., 2010.** Studies on population dynamics of piscian nematode *Spinectectus corti* Moorthy, 1938 *The Ecosphere (An International Biannual Journal of Environment and Biological Sciences).* 1(1):130-132.
9. **Bhure D.B. and Nanware S.S., 2011.** Population Dynamics of *Silurotaenia raoii* Bhure et.al., 2010 from *Mystus seenghala*. *The Ecosphere (An International Biannual Journal of Environment and Biological Sciences).* 2(1&2):9-12.
10. **Bhure, Dhanraj Balbhim, Nanware, Sanjay Shamrao and Sunnap, Namrata V. 2013.** Status of Diversity of Cestode Parasites of Domestic Fowl (*Gallus Gallus Domesticus*) from Nanded District,

- Maharashtra State. *Indian Journal of Applied Research*. Vol.3 (10): 28-31
11. **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 An International Research Journal of Biological Sciences*. Vol.19 No.1, Pp 161-166.
 12. **Bhure, Dhanraj Balbhim, Nanware, Sanjay Shamrao and Kasar C.R. 2014.** Studies on Prevalence of Cesodes Parasitizing *Gallus gallus domesticus*. *Environment Conservation Journal*. Vol. 15 (1&2) pp 171-175.
 13. **Bhure, Dhanraj Balbhim, Nanware, Sanjay Shamrao 2014.** Studies on Prevalence of Cestode Parasites of Freshwater Fish, *Channa punctatus*. *Journal of Entomology and Zoology Studies*. Vol. 2(4) pp 283-285.
 14. **Dobson, A.P. and Roberts, M.G., 1994.** The population dynamic of parasitic helminth Communities. *Parasitology* 102 (Suppl.): 507-510.
 15. **Dogiel, V.A., 1935.** The present tasks of ecological Parasitology. *Tud. Patergof. Biol Inst* 15:2
 16. **Dogiel, V.A. et al., 1958.** *Parasitology of Fishes*. Leningrad University press, Oliver and Boyd, Edinburgh and London.
 17. **Euzeby, J.1972.** Climate and development of helminthes: Climatology and helminth dev. *J Rev Med Vet (Toulouse)*, 123 (5): 637-655.
 18. **Farhaduzzaman, A.M., Manjurul Alam, 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*. Vol. 28: pp. 65-68
 19. **Fernando, C.H. and Hanek, C., 1976.** Gills. In: C.R. Kennedy (ed.). *Ecological aspects of Parasitology*. North Holland publishing company Amsterdam pp. 209-226.
 20. **Himansu Bhusan Mahananda. 2014.** Alterations in some haemato-bio-chemical parameters of a fresh water, air breathing fish, *Channa punctatus* (Bloch) under the stress of chronic, sublethal dose of nickel. *2(4):1392-1397*
 21. **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 An International Research Journal*, 12(2): 143-148.
 22. **Jadhav, B.V., Bhure, D.B., Padwal, Nitin and Nanware, S.S.,2007.** Studies on seasonal infection of *M.armatus* (Cur & Val) By Ptychobothriidae, Luhe1902. *Proc. 17th All India ZSI conference, Bioinformatics*, Chapt.14 pp.125-131.
 23. **Kasar, C. R., Patki, A. K., Bhure, D.B. and Nanware, S.S., 2012.** Seasonal Variation of *Valipora* Linton,1927 (Dilepididae-Wardle, McLeod and Radinovsky,1974) from *Columba livia*. *Bionano Frontier* Vol.5 (2-I):212-213.
 24. **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.
 25. **Kennedy, C.R. And Hine, D.M., 1970.** Population biology of the cestode *Proteocephalus torulusis* (Bat Sch) in dace *Leuciscus leuciscus* (L) of the river Avon. *J.Fish Biol.* 1(3): 209-219.
 26. **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.
 27. **Kennedy, C.R. ,1976.** *Ecological aspects of parasitology*. North Holland publishing company Amsterdam 10x ford.
 28. **Kennedy, C.R. , 1977(a).** The regulation of fish parasite populations. In regulation of parasite population 61-109.
 29. **Kulakovskaya, O.P.,1962.** The seasonal changes in representatives of the family Caryophyllaeidae (Cestoda) under conditions existing in Western Ukrainian region, *URSR. Scientific Memories of Science Biological Museum of the Utranisn Academy of Science* (10): 88-93.
 30. **Kulakovskaya, O.P.,1964.** Effect of environmental conditions on relationship

- between some intestinal parasites of fish. *Paroblemy Parazitologii*. (3): 9-15.
31. **Laxma Reddy, B and Benarjee, G. 2014.** Comparative liver histopathology of fresh water murrels due to trematode, *Euclinostomum heterostomum*. 2(1):396-399.
 32. **Lawrence, J.L.,1970.** Effect of season, host age on endo helminthes of *Catastomus Commersoni*. *J. Parasitology* 56 (3): 567-571.
 33. **Looss,A.1899.** Weitere Beitrage Zur Kenthis der Trematoden fauna aegyptens. *Zool. Jahrb. Syst.* Vol. 12:521-784.
 34. **Moller, H., 1978.** The effect of salinity and temperature in the development and survival of fish parasites. *J. of Fish Bio.* 12: 311-324.
 35. **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.
 36. **Nybein, O. 1942.** Zuer Helminth Fauna der Sussawasser Fische Schwedens II. Die cestode, des welses. *Goteboogs Kgl. Vetenskaps-Akad Handl. Sect. B. L.* 1-24.
 37. **Pennyuick, K.L., 1973.** Seasonal variation in the parasite population of three spined Stickle backs, *Gasterosteus aculeatus L.* *Parasitology* 63:373-388.
 38. **Rajeshwar Rao and V. Ramkrishna., 1982.** The seasonal variations of Helminth Parasites of *Rana tigrina* in Hyderabad district *Geobios* (10): 34-36.
 39. **Ramreddy, G.B.V., 1980.** Studies on the population dynamics of helminth parasite of certain lizard of Hyderabad. *Ph. D. Thesis, Osmania University Hyderabad A. P. India.*
 40. **Rudolphi.1810.** Entozoorum sive vermium intestinalium nistoria naturalis 11 pars. 2 xii 386 pp Amstelaedami. *Zool. Anz.* 29 (8): 224-252.
 41. **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* Vol.4 (9):21-29.
 42. **Stafford, J. 1904.** Trematodes from Canadian fishes. *Zool. Anz.* Vol. 27: 481-495.
 43. **Yamaguti, S. 1954.** Systema helminthum. Part I. Digenetic trematodes of fishes.405 pp., Tokyo.

DOI: <https://dx.doi.org/10.5281/zenodo.7252222>

Received: 4 January 2015;

Accepted: 19 February 2015;

Available online : 5 March 2015