

Distribution Of Helminth Parasites In Intestines And Their Seasonal Rate Of Infestation In Freshwater Fishes From Latur District, (M.S.) India

M.N. Kolpuke * and A.V. Pathan **

*Department of Zoology, Maharashtra Mahavidyalaya, Nilanga -413521, Maharashtra, India.

**Department of Zoology, Azad college, Ausa- 413520, Maharashtra, India

Abstract

The present study deals with the seasonal prevalence of parasitic helminths in freshwater fishes from Latur District (M. S.) India. The survey was conducted during, annual cycle 2012 to 2013 from different sampling station to estimate the seasonal prevalence of parasitic helminths. For this study 876 freshwater fishes were randomly selected. Fish samples were collected from different localities of Latur District, Maharashtra State, namely Ausa, Nilanga, Ahemadpur, Deoni, Jalkot, Renapur, Latur, Shirur-Anantpal, Chakur and Udgir.

The seasonal prevalence percentage of parasitic helminths was highest during summer (29.43%), followed by winter (20.00%) and lowest during rainy (9.89%). There was considerable difference found in the seasonal prevalence. The present study is concentrated only on the prevalence of cestode and nematode. The major helminths parasites were found in the fishes include *Senga spp.*, *Procamallanus sp.*, *Circumoncobothrium sp.* and *Gangesia sp.* The results of the parasitic helminth are discussed in relation to seasonal variation and found highest during summer followed by rainy and lowest during winter season.

Keywords: Survey, Freshwater fishes, Gastrointestinal helminths, Seasonal prevalence

Introduction

India is the mega biodiversity country in the world. Fish are the most important inhabitants of the aquatic ecosystem mainly marine and fresh water and provides the human population cheap and easily digestible proteins. In India it is estimated that about 10 million tons of fishes are required to meet the annual demand of fish proteins as compared to an actual annual production of only 3.5 million tons (Shukla and Upadhyay, 1998). The major component of fish is protein. Fish proteins have a high biological value. It also contains variable quantities of calcium, phosphate, fat and other nutrient important for human health and growth. Fish provides the world's prime source of high quality protein, 14-16% of the animal protein consumed worldwide; over one billion people consume fish as their primary source of animal protein.

Recent studies indicate that of 750 species of freshwater fish species found in India, a large number of them are familiar only to the local population. These species are better known to the rural population due to the importance they attach to these species as a vital and affordable source of

nutrition. Intestinal parasitic helminths have a serious impact on fish health, productivity, quality and quantity of meat. Fish parasitic populations are known to differ due to variation in the environment and host population (Dogial, 1961). Helminth parasites of fishes are commonly divided into three main groups; cestodes, nematodes and trematodes. Kennedy, (1975) stated that population investigation can provide data for the predication of integrated methods to achieve the regulation of numbers of harmful parasites, because it has been stated that a single method of control have little value, where as co-ordinated activities ameliorate the infection.

Material And Method

Examination of fish for collection of parasites:

Examination of intestinal parasites was carried out by using the method described by Hassan *et al.*, (2010). After the separating and counting the population of different helminth parasites from different freshwater fishes the parasites were preserved in separate bottles. Some of these were used for the taxonomic study.

Statistical analysis employed for the population dynamics studies of helminth Parasites:

The definitions and formulae of prevalence, mean intensity and relative density given by Margolis *et al.*, (1982) and Index of infection given by Tenoza and Zejda (1974)

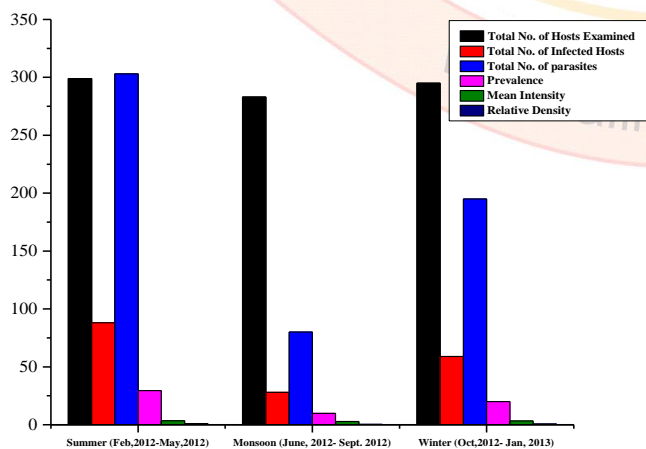
Result And Discussion

Seasonal occurrence of helminth parasitic infections during 2012-13

During this yearly study period total 877 hosts were examined out of which 175 hosts were found infected and total 578 parasites were recovered. The highest prevalence, mean intensity and relative density is found in summer season. (Table 1 and Graph 1)

Table 1: Seasonal variations of helminth parasites of freshwater fishes 2012-2013

Seasons	Hosts Examined	Infected Hosts	Parasites	Prevalence	Mean Intensity	Relative Density
Summer Feb.12 - May.12	299	88	303	29.43	3.44	1.01
Monsoon June, 12- Sept.12	283	28	80	9.89	2.86	0.28
Winter Oct. 12- Jan.13	295	59	195	20.00	3.31	0.66



Graph 1: Seasonal influence of parasitic infections during Feb.2012- Jan. 2013

Effect of seasons on monthly fluctuation of helminth parasites

During present study more prevalence is found during summer season followed by winter and low in rainy season. Jadhav and Shinde (1976) 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.

Rainfall had an adverse effect on the incidence of infection and low rainfall always favoured an increase of infection level in the piscian host. The temperature and rainfall play significant roles in the dispersion of the infective agents (Rao and Rao, 1996). The frequencies of infection and maturation of the parasites reach the peaks during the spring. It may be presumed that the mature worms are virtually eliminated during the summer and a new immature generation pressed into the host during early autumn. New infections always occur between autumn and spring. The worms were 50% mature and 50% immature during December, 75% mature during January to March and most of the worms get matured during summer. The gravid proglottides may disperse along with the flow of water to spread the infection which might probably occur during the monsoon.

The present study revealed incidences are high during the period of summer seasons. Thus, the temperature and seasons play an important role in the recruitment of parasitic fauna.

Seasonal variation in prevalence of infection

The analysis of data in the present investigation showd occurrence of helminth parasites variable according to seasons. The high incidence, intensity, density and index of infection of all the helminth parasites and occurred in summer season followed by winter season whereas lower infections in monsoon season.

The present work will provide a database for developing agencies of fish and fishery to sustain the ichthyofaunal diversity associated with helminth parasites of Latur district. The purpose of this survey was to estimate the present status of gastrointestinal helminth parasies to provide information for further studies.

Conclusion

The one year survey (2012 to 2013) has shown that fresh water fishes from the Latur district shows wide range of freshwater fishes. After the analysis of data the present study can be concluded that the high infection of helminth parasites (incidence, intensity, density and index of infection) were occurred in summer seasons followed by winter and low in monsoon season. This type of results indicated that environmental factors and feeding habitant are influencing the seasonally of parasitic infection either directly or indirectly. Observing the prevalence of *Procamallanus* sp. in the target host fish (*Mastacembelus armatus*) in this study, shows that the intermediate in this case, copepods, are present in the habitat. This is due to the abundant vegetation which gives rise to a more extensive habitat for the copepods therefore; fish are more exposed to greater concentrations of *Procamallanus* sp.

Acknowledgments

The author thankful to Head, Dept of Zoology, D.B.F. Dayanand College of Arts and Science, Solapur (M.S) India for providing laboratory advances and library Facilities.

References

1. **Dogial, V.A. (1961).** Ecology of the parasites of freshwater fishes. In: Parasitology of fishes (Eds. Dogial, V.A., Petrushevski, G.K. and Polyanski, Yu.I.) pp.1-47. Oliver and Byod, London.
2. **Hassan, A.A, Akinsanya, B and Adegaju, W.A. (2010).** Impacts Of Helminth Parasites on

Clarias gariepinus And *Synodontis clarias* From Lekki Lagoon, Lagos, Nigeria. Report and Opinion, 2010; 2 (11)

3. **Jadhav, B.V. and Shinde, G.B. (1976).** New species of genus *Circumoncobothrium* Shinde, 1968 (Cestoda: *Pseudophyllidea carus*, 1863) from afreshwater fish Aurangabad, India. *J. Indian Bio. Asso.* 2: 163-166.
4. **Kennedy, C. R. (1975).** Dispersion of parasites within a Host-Parasite System in: Ecological animal parasitology, Kennedy, C.R. (Ed.). Blackwell Scientific Publication, Oxford London.
5. **Margolis, L., Esch, G. W., Holmes, J. C., Kuris, A. M. and Schad, G. A. (1982):** The use of ecological terms in parasitology (Report of and adhoc committee of the American Society of Parasitologists). *J. Parasitol.* 68:131-133.
6. **Rao, S. M. and Rao, V. R., (1996).** Influence of temperature and rainfall on the helminth infection and relative density of helminth parasites in *Congresox talabonoides* (Bleeker). *Uttar Pradesh J. Zool.* 16(1): 46-48.
7. **Shukla, G.S. and Upadhyay, V.B. (1998).** A textbook of economic zoology. Rastogi Publications, India. 205 p.
8. **Tenoza, F. Zejda, J. (1974):** The helminth synyster of *Clethrionomys glareolus* in a low land forest and its change. *Acta. Sci. Nat. Brno.* 8 (6):1-48.