# Studies on helminth parasites of fresh water fishes in Nathsagar reservoir, Paithan, Aurangabad district

# Nitin Podwal, B.V. Jadhav and D.B. Bhure

Department of Zoology, Dr. B.A.M.U., Aurangabad, (M.S.)

#### Abstract

Freshwater fishes from Nathsagar reservoir, Paithan, Dist. Aurangabad (M.S.) were collected from June 2004 to May 2006. The 1296 fishes were observed from helminthic infections, out of them 761 fishes (58.71%) were infected with helminth parasites. Thirty six species of helminthes were recovered throughout the investigation i.e. 10 species of the trematodes include the genera *Genarchopsis*, Ozaki, 1925; Orientochreadium, Tubangui, 1931; *Oudhia*, Dayal et al. Gupta, 1954; *Phyllodistomum*, Braun, 1899 and *Macrotrema*, Gupta, 1931. 20 species of the cestodes included six genera i.e. *Lytocestus*, Cohn, 1908; Senga, Dollfus, 1934; Shinde, 1968; *Proteocehalus*, Weinlend, 1858; *Gangesia*, Woodland, 1924 and *Silurotaenia*, Nybelin, 1942. And six species of the nematodes included two genera. *Rhabdochona*, Railliet, 1961 and *Camalanus*, Yeh, 1960. The high prevalence (75.69%) occur in summer season where low prevalence (37.5%) in monsoon season. The *Mastacembellus armatus* is highly infected (64.58%) with helminth parasites.

**Keywords**- Helminth parasites, prevalence, Nathsagar reservoir, freshwater fishes.

#### Introduction

Nathsagar reservoir is one of the major irrigated project in Maharashtra State. It has been constructed across the river Godavari. The catchment area of this dam is 21,750 km². Helminth parasites (cestodes, trematodes and nematodes) were collected from Nathsagar reservoir, Paithan. Parasitic infection may occur with man and animals. From the present investigations, the results will be the key for identifying the helminthes and controlling of helminthes infecting fishes.

#### Material and methods

Freshwater fishes were collected from different sites of Nathsagar dam during June 2004 to May 2006. The helminthes were collected, preserved, processed to a permanent slide and identified under a compound microscope, drawings are made-up with the aid of camera lucida and identified by Prof. B.V. Jadhav. Parasites distribution, host specificity, prevalence of helminthic infections were studied and recorded.

### **Results and Discussion**

There were 1296 fishes of 09 species observed with helminthic infection. 36 species of helminthes were recovered. The ten species of monogenea trematodes were Genarchopsis piscicola, G. ozakii, Orientocradium dayali, p. Phillppai, O. clariae, O. mahendrai, O. vermai, Oudhia horai, Phyllodistomum singhiai and Macrotrema macroni. The twenty species of cestodes were Lytocestus indicus, L. clarie, L. teranesnsis, L. bartrachusae, Senga maharashtrii, S. mohekarae, S. gachuae, S. paithanesis, Circumnobothrium aurangabadensis, C. alii, C. yamaguti, C. ophiocephali, C. khami, Proteocephalus vitellaris, P. gobiorum, gangeshia maharashtrii, G. dharurensis, G. mastacemali, Silurotaenia macroni and S. godavari. Six species of nematodes were Rhobdochona singhi, R. Mazeedi, R. alii, R. sailuensis,

Camallanus anafantis and C. unispicutus. All worms of present investigation are shown in Table 1 with hosts

**Prevalence**- The prevalence results are shown in Table-2. The higher prevalence occur in summer season (75.69%) followed by winter season (62.96%) and rainy season (37.5%). Because high temperature & sufficient moisture needed for the development of parasites. The higher incidence occur in host *Mastacembellus armatus* (64.58%), where as lower in *Wallago attu* (57.38%). Because these infections are host specific & morphological, physiological and ecological factors affect the host specificity. The valuable information pertaining to the influence of season on the helminth parasites was contributed by served workers like Tornquist (1931) who described about the systematic method of occurrence of certain fish parasites *Camallanus lacustrs* that the infective stages invade the host during summer, the growth and maturation take place during autumn & winter and release of their infective progeny occurs during summer. According to Gibbons (1976), heavier incidence of nematodes occurs during late spring or summer month. Kennedy (1968) reported that the temperature is the major factor in controlling the seasonal distribution of many parasites.

The present investigations also occur such type of results i.e. high infection as well as prevalence occur in summer months. The population investigations can prove data for the prediction of integrated methods to achieve the regulation of number of harmful parasites, because it has been stated that a single method of control or co-ordination acitivities are of little value since they ameliorate the infection (Kennedy, 1975 and 1978). This type of result indicates the morphological, physiological and ecological factor (seasons) affecting the distribution of parasites.

## Acknowledgements

The authors are sincerely acknowledge, to the UGC, New Delhi for sanctioning the major research project no-30-193/2004 (SR), dated 10-11-2004 for financial assistance.

#### References

- Anderson, R.M., 1976. Seasonal variation in the population dynamics of *Caryophyllacus laticeps*. *Parasitology*, 72:281-395.
- Dobson, A.P. and Roberts, M.G., 1999. The population dynamics of parasite helminthic communities. *Parasitology*, 102 (supl.):507-510.
- Gupta, 1951. On a new trematode *Phyllodistomium singhii* sp. of the subfamily, Allocreadinae Looss. 1899 from the intestine of a fresh water fish *Mastacembellus armatus*. *Ind. J. Helm.*, 3(1):21-28.
- Hiware, C.J., 1999. Population dynamics of the Coryophylloeid cestode parasitizing freshwater air breathing predatory fish *Clarias batrachus* (Linnacus). *Ravi. Di. Para*, vol. XIX (LXIII) IV-I.
- Kenndy, C.R., 1976. Ecological aspects of parasitology. North Holland Publishing company. Amsterdam Oxford.
- Lawrence, J.L., 1970. Effect of season, host age, on endohelminthes of *Catastomus commersoni*. *J. Para.*, 56(3):567-571.

Jadhav, B.V., Bhure, D.B. and Nitin Padwal, 2005. *A survey of cestode parasites of freshwater fishes from Pune and Ahmednagar district (M.S.)* India. Proc. Recent Trends in Para. At Secunderebad 29<sup>th</sup> 30<sup>th</sup> sept 2005:48-51.

Wongsawad *et al.*, 2004. Helminths of vertebrates in Mae-sa-stream. Chiangmai, Thailand. *Southeast Asian J. Trop. Med. Publ. Health*, 35(suppl):140-146.

Table-1: Helminths and their fish host

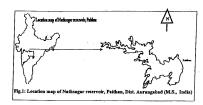
Helminths	Hosts				
Trematoda 1. Genarchopsis piscicoal (Stivastava, 1933) 2. G. ozakii (Bashirullah et.al.1972) 3. Orientocreodiium dayali (Dayal, 1949) 4. O. philippai (Gupta, 1957) 5. O. clariae (Chatterji, 1933) 6. O. mahendrai (Gupta, 1951) 7. O. vermai (Gupta,1951) 8. Oudhia horai (Dayal et. Gupta, 1951) 9. Phyllodistomum singhiai (Gupta, 1951)	Channa punctus Channa punctus Channa punctus Channa punctus Clarias fatrachus Clarias batrachus Clarias batrachus Heteropneustes fossilis Mastacembellus armatus				
10. Macrotrema macroin (Gupta, 1951)	Macronus cavasius				
Cestoda  11. Lytocestus indicus (Moghe, 1925) 12. L. clarias (Tandon et al., 2005) 13. L. teranaensis (Kadam et al., 1999) 14. L. batruchusae (Pawar et al., 2002) 15. Senga maharashtyrii (Jadhav et al., 1991) 16. S. mohekarae (Tat et al., 1997) 17. S. gachuae (Jadhav et al., 1991) 18. S. paithanensis (Kadam et al., 1981) 19. Circumonobothrium aurangabadenis (Jadhav et al., 1979) 20. C.yamaguti (Jadhav et al., 1990) 21. C. ophiocephali (Shinde, 1968) 22. C. taii (Shinde et al., 1994) 23. C. Khami, (Shinde, 1977) 24. Proteocephalus vitellaris (Verma, 1929) 25. P. gobiorum (Dogell et al., 1939) 26. Gangesia maharashtrii (Jadhav et al., 1995) 27. G. dharurensis (Jadhav et al., 1997) 28. G. mastacembali (Wankhede, 2004) 29. silurotaenia macroni (Shinde et al., 184) 30. S. gondavari (Wankhede et al., 2002)	Clarias batrachus Clarias batrachus Clarias batrachus Clarias batrachus Clarias batrachus Mastacembellus armatus Mustacembellus armatus Mystus seanghala Wallago attu Wallago attu Wallago attu Mystus seenghala Mystus seenghala				
Nematoda 31. Rhabdochona singhi (Ali, 1956) 32. R. mazeedi (Parsad et al.,1965) 33. R. alii (Kalyankar, 1972) 34. R. sailuensis (Khadap et al., 2004) 35. Camalanus anabantis (Pearse, 1933) 36. C. unlspictus (Khera, 1956)	Labeo rohita Labeo rohita Labeo rohita Labeo rohita Channa gachua Channa gachua				

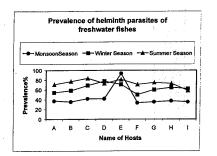
(109)

 $Table \ 2-Total\ number\ and\ total\ prevalence\ (\%)\ of\ infected\ fishes\ in\ Nathsagar\ Reservoir, Paithan.$ 

Name of Host	No.of Host dissected			No. of host infected				Prevalence(%)				
	M	w	s	Т	М	W	S	Т	М	W	s	Т
Channa punctatas	48	48	48	144	18	26	34	78	37.30	54.16	70.83	54.86
Heteropneustus fossiliss	48	48	48	144	17	28	37	82	37.41	58.33	77.08	56.94
Mastacembellus armatus	48	48	48	144	20	33	40	93	41.66	68.75	83.33	64.58
Clarisa batrachus	48	48	48	144	20	37	35	92	41.66	77.68	72.91	63.88
Macronus cavasius	48	48	48	144	19	34	39	92	93.58	70.83	81.25	63.88
Wallago attu	48	48	48	144	16	24	34	74	33.33	50.00	70.83	51.38
labeo rohita	48	48	48	144	17	29	36	82	35.41	60.41	75.00	56.94
Mystus seenghala	48	48	48	144	18	31	35	84	37.50	64.58	72.91	58.33
Channa gachua	48	48	48	144	17	30	37	84	35.41	62.25	58.33	58.33
Total	432	432	432	1296	162	272	327	761	37.5	62.96	75.69	58.79

M- Monsoon season ,W- Winter season, S- Summer season, T- Total.





A. Channa punctatus B. Heteropneustus fossilis C. Mastacembellus armatus D. Clarias batrachus E. Macronus cavasius F. Wallago attu G. Labeo rohita

H. Mystus seenghala I. Channa gachua.