

# Analysis of incidence of cestode parasites *Lytocestus*, *Circumoncobothrium*, *Senga* and *Gangesia* sp. from freshwater fishes *Clarias batrachus*, *Mastacembelus armatus*, *Channa gachua* and *Wallago attu* during February 2015 to January 2017 from Ujani resevoir, Maharashtra state, India.

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## ABSTRACT

In the present analysis the Incidence of cestode parasites *Lytocestus*, *Circumoncobothrium*, *Senga* and *Gangesia* sp. from freshwater fishes *Clarias batrachus*, *Mastacembelus armatus*, *Channa gachua* and *Wallago attu* during February 2015 to January 2017 from Ujani resevoir, Maharashtra state, India was studied. The population dynamics of cestode parasites form fresh water fishes from various regions of India certainly requires further investigation to explore the causes and current scenario of incidence of the parasite. Therefore, considering the detrimental effect of parasitic contamination on fish health, the present study was planned to collect the data on variations in seasonal incidence.

**KEYWORDS** : Incidence, Cestode parasite, *Lytocestus*, *Circumoncobothrium*, *Senga* and *Gangesia* sp., freshwater fishes, *Clarias batrachus*, *Mastacembelus armatus*, *Channa gachua*, *Wallago attu* Ujani reservoir

## I. INTRODUCTION

Adult cestode parasites are found in the viscera of fishes which shows some direct effects by annexation and demolition of host cells and tissue; by production of toxic substances and metabolites; as well as by producing mechanical ileus. The indirect effects of cestode infection to fishes includes reduction in host productivity

(weight loss, reproduction etc.); increased utilization of food and reduction in breeding efficiency, ultimately causing a disease. Population dynamics i.e. ecology is the study of interaction and relationship between parasites and its environment. In life sciences, population dynamics is an extremely dynamic field. In India, the study of cestode population is still in budding stage. Environmental variations were reflected in seasonal difference in the incidence of diseases. From nutritional, medicinal, economical, ecological, point of view fishes are significant constituents of ecosystem. As fishes provides high nutritious food, the cestode parasites infect these fishes by which they reduces the food value. Parasitic diseases are major public health problem of tropical countries including India. They infect man, domestic animals and also wild life. Notable work has been done in population dynamics of helminth parasites by earlier researchers ( Anderson, 1976; Dobson, 1994; Dogiel, 1958; Kennedy 1968; Mollar, 1978). The population dynamics is also influenced by the nature of the life cycle of the cestode parasites or their intermediate hosts or by both cestode parasites and their hosts. The feeding habit of freshwater fishes has increased the possibility of consume food contaminated with parasites. When rain water is not available and portion of water reservoir gets dry or becomes very shallow during summer the life cycle of parasites is disturbed, due to which the onwards transmission of parasites stops resulting into low prevalence and incidence of parasite. (Hiware, 1999).

Therefore, an attempt has been made to evaluate the Incidence of Cestode parasite *Circumoncobothrium shindei* from freshwater fish *Mastacembelus armatus* during Feb 2015 – Jan 2017 from Ujani reservoir, Maharashtra state, India.

## II. MATERIAL AND METHOD

The Ujani dam is constructed on the Bhima River near the village Ujani, Madha Tahasil of Solapur district in Maharashtra state. The river Bhima is a major tributary of the Krishna River. The study sites of the present investigation viz. Indapur, Palasdev and Bhigwan are located in the backwater of Ujani Reservoir about 50 kms upstream of the dam. The spread of the Ujani reservoir occupies the North of the dam site to the South lie hill slope and agricultural lands of two villages, Kumbhargao and Dalaj No. 2. Both these villages have been resettled on the new sites due to the construction of Ujani reservoir.

Different freshwater fishes *Mastacembalus armatus*, *Clarias batrachus*, *Channagachua* and *Wallago attu* were collected from different locations viz.. Indapur, Palasdev and Bhigwan of Ujani reservoir during February 2015 to January 2017.. The intestines were examined and recorded the data of infected intestine. After separating and counting the population of cestode parasites from different hosts, the parasites were preserved in 4% formaline in separate bottles. Some of these parasites were used for the taxonomic study.

The incidence of infection are calculated by using standard formulae as follows: (Jadhav and Bhure, 2006):

**Incidence of Infection** – Incidence of infection is calculated by using following formula:

$$\text{Incidence of infection (X}_1\text{)} = \frac{\text{No. of hosts infected (b)}}{\text{No. of hosts examined (a)}} \times 100$$

### III. RESULTS AND DISCUSSION

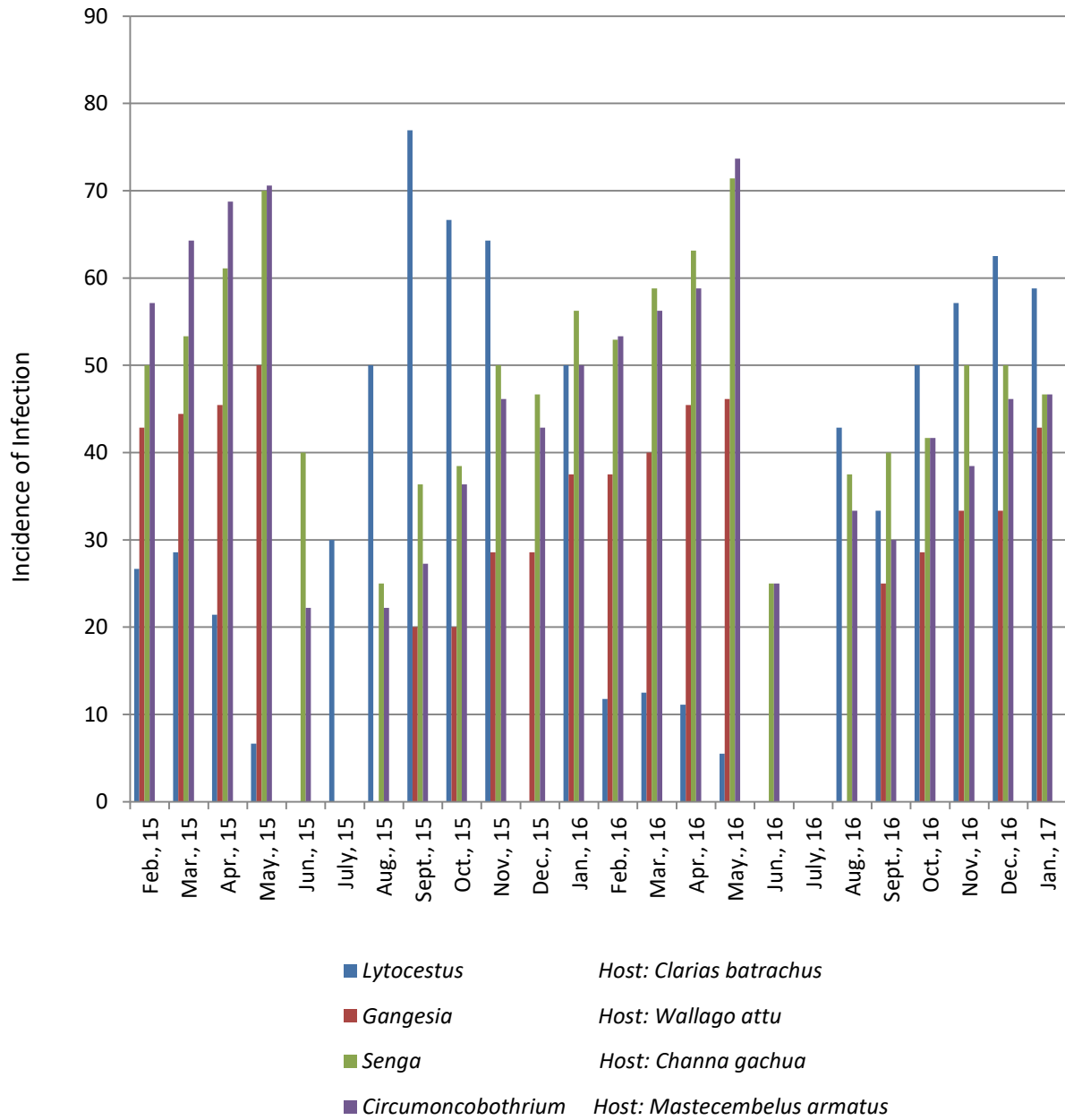
**Table :** The incidence of cestode parasites *Lytocestus*, *Circumonchobothrium*, *Senga* and *Gangesia* sp. from freshwater fishes *Clarias batrachus*, *Mastacembelus armatus*, *Channa gachua* and *Wallago attu* during February 2015 to January 2017 from Ujani reservoir

Month	Lytocestus Sp.			Gangesia Sp.			Senga Sp.			Circumonchobothrium Sp.		
	No. of host examined (a)	No. of host Infected (b)	Inci dence % b/a x 100	No. of host examined (a)	No. of host Infected (b)	Inci dence % b/a x 100	No. of host examined (a)	No. of host Infected (b)	Inci dence % b/a x 100	No. of host examined (a)	No. of host Infected (b)	Inci dence % b/a x 100
Feb., 15	15	04	26.66	07	03	42.85	14	07	50.00	14	08	57.14
Mar., 15	14	04	28.57	09	04	44.44	15	08	53.33	14	09	64.28
Apr., 15	14	03	21.42	11	05	45.45	18	11	61.11	16	11	68.75
May., 15	15	01	06.66	12	06	50.00	20	14	70.00	17	12	70.58
Jun., 15	08	00	00.00	02	-	-	05	02	40.00	09	02	22.22
July, 15	10	03	30.00	-	-	-	-	-	-	-	-	-
Aug., 15	10	05	50.00	03	-	-	08	02	25.00	09	02	22.22
Sept., 15	13	10	76.92	05	01	20.00	11	04	36.36	11	03	27.27
Oct., 15	15	10	66.66	05	01	20.00	13	05	38.46	11	04	36.36
Nov., 15	14	09	64.28	07	02	28.57	14	07	50.00	13	06	46.15
Dec., 15	-	-	-	07	02	28.57	15	07	46.66	14	06	42.85
Jan., 16	16	08	50.00	08	03	37.50	16	09	56.25	14	07	50.00
Feb., 16	17	02	11.76	08	03	37.50	17	09	52.94	15	08	53.33
Mar., 16	16	02	12.50	10	04	40.00	17	10	58.82	16	09	56.25
Apr., 16	18	02	11.11	11	05	45.45	19	12	63.15	17	10	58.82
May., 16	18	01	05.50	13	06	46.15	21	15	71.42	19	14	73.68

<b>Jun., 16</b>	05	00	00.00	02	-	-	08	02	25.00	08	02	25.00
<b>July, 16</b>	-	-	-	-	-	-	-	-	-	-	-	-
<b>Aug., 16</b>	07	03	42.85	02	-	-	08	03	37.50	09	03	33.33
<b>Sept., 16</b>	09	03	33.33	04	01	25.00	10	04	40.00	10	03	30.00
<b>Oct., 16</b>	14	07	50.00	07	02	28.57	12	05	41.66	12	05	41.66
<b>Nov., 16</b>	14	08	57.14	06	02	33.33	12	06	50.00	13	05	38.46
<b>Dec., 16</b>	16	10	62.50	06	02	33.33	14	07	50.00	13	06	46.15
<b>Jan., 17</b>	17	10	58.82	07	03	42.85	15	07	46.66	15	07	46.66



**Fig : Showing the Incidence of Cestode parasites infection in fresh water fishes during Feb 2015-Jan 2017 from "Ujani reservoir"**



The present study revealed that cestode parasites have specific community structure as *Mastacembelus armatus*, *Channa gachua*, *Wallago attu*, and *Clarias batrachus* were examined for cestode parasitic infection and found infected with cestode parasites. In fishes, the mechanism of parasites establishment varies from species to species and it also depend on the stage of parasite, host tissue and environmental conditions. *Senga sp.* was found in *Channa gachua* and *Circumoncobothrium sp.* was found in from *Mastacembellus armatus*, *Lytocestus sp.* was found from *Clarias batrachus* and *Gangesia sp.* was found in *Wallago attu*. The low prevalence of cestodes infection may be due to discontinuity of the pond itself.

The analysis of data showed that the occurrence of cestode parasites varies according to seasons. The high incidence of infection of all cestode parasites was observed in summer season followed by winter season whereas lower in monsoon season, except *Lytocestus*. According to Kennedy (1971, 1975 and 1977) and Rodhe (1993) factors such as the temp, humidity, rainfall, feeding habits of host, availability of infective host and parasite maturation 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 factors of seasonal periodicity of infection. In the present study the infection of Caryophyllidean tapeworm *Lytocestus* sp. was also high during the period of low temperature and low during the period of high temperature.

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