



## INCIDENCE OF NEMATODE PARASITES FROM *MASTACEMBELUS ARMATUS* FROM MAKANI DAM OSMANABAD DIST.

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### ABSTRACT :

**M**astacembelus armatus Lacepede, 1800 is the largest spiny eel of the genus Mastacembelus. Mastacembelus armatus is considered to be the delicacy of India. One hundred and eighteen specimens of *M. armatus* were analyzed in order to study Incidence of Nematodes. A study was conducted to investigate Incidence of Camallanus sp. parasitizing freshwater fish Mastacembelus armatus Lacepede, 1800 from Makani Dam Osmanabad District (M.S.) India during March, 2015 to February, 2016. High incidence of infection of Piscean nematode parasites were reported in Summer followed by Winter whereas infection was low in monsoon.



**KEYWORDS :** Camallanus sp., Mastacembelus armatus Lacepede, 1800, Makani Dam.

### INTRODUCTION

Parasitism is natural way of life among a parasitic diseases are the major public health problem leading to morbidity and mortality in tropical countries, including India. Several types of parasitism are recognized. Beside these some are ectoparasite and endoparasite including cestode, trematode and nematode. These are mostly intestinal helminth parasites. Gastrointestinal (GI) nematode infections are amongst the most prevalent worldwide, although this is largely acknowledged only by those working in this field. It is estimated that there are 3.5 billion cases worldwide, of which 450 million are individuals who are seriously ill as a result, the majority of who are children, and of which 44 million are pregnant women infected with hookworms. Approximately 125 000 deaths occur per year, and these are mainly due to infections with the hookworms, *Ancylostoma duodenale* and *Necator americanus*, or the roundworm, *Ascaris lumbricoides*. There are 300–500 million cases of malaria per year and, although this number is much less than that for GI nematode infections, the number of deaths attributable to malaria is far greater, reaching 3 million per year. (Gillian Stepak, 2006). They adversely affect the general health and productivity of children, especially suffering from malnutrition since helminthic infections are usually asymptomatic in morbidity at they not regarded as serious disease.

Most of the freshwater fishes constitute highly nutritive food for human being some of them are considered as delicious. Fish is very much rich in proteins and fats. These edible fishes are known to harbour a number of parasite nematodes which cause deterioration in their health, hence their market and nutritive value

is affected.

The presence of parasites is to large extent detrimental for a fish population and consequently imposes big losses on fisheries and the fishing industry. Keeping in mind the economical, nutritional and medicinal value of freshwater fishes. The author has undertaken to investigate and evaluate data of Incidence of nematode parasites from *Mastacembelus armatus* from Makani Dam, Osmanabad Dist.

## MATERIAL AND METHODS:

### Collection of fish specimens and parasites

Live specimens of host fish were collected from the Makani Dam and from the local fish markets of Makani and Latur District MS India. They were brought to the laboratory and examined morphologically. The host fish, *M. Armatus* was collected continuously for one year at regular intervals. Fish specimens were dissected out in physiological saline (0.75 % NaCl solution) for collecting nematode parasites from different organs. Nematodes collected were washed thoroughly in normal saline. Then they are killed and fixed in hot 70 % alcohol, stored in glycerine alcohol (1:3) and studied as wet mounts or temporary mounts in glycerine. Taxonomical identification of nematode parasites was done by adopting the works of Keys of Yamaguti (1958), (1959), (1961) and Drawings are made with the aid of Camera Lucida.

### 2. Statistical analysis:

Incidence of infection were recorded and calculated according to Margolis et.al., (1982).

$$\text{Incidence of Infection} = \frac{\text{No. of Infected Host}}{\text{Total Number of Host Examined}} \times 100$$

## RESULT AND DISCUSSION:

Present investigation one hundred and eighteen specimens of *M. armatus* were analyzed and near about 43 fish were infected apart from that *M. armatus* infected with 55 number of *Nematode Camallanus* spp. (Table I). These nematodes were found in the intestine and visceral organs of the fish *Mastacembelus armatus* in the summer season followed by winter and rainy season (Table No.2). Leningrad (1999) pointed out that an increase in temperature to certain limits accelerates the fission and larval development of parasites while beyond that limit these processes slow down. In the present study, the water temperature during summer increases in the reservoir and surface water temperature becomes high (>38°C) during summer, which was probably not suitable for the development of intermediate stages of nematode parasites. The increase in temperature probably caused the eggs degeneration, destroyed many parasites before becoming adults. The Incidence of infection of nematode parasites in *M. armatus* during different months is listed in Table: 1. The parasites *Camallanus* sp. recorded maximum in the month of February, March, April and May i.e. in summer (50%, 30%, 50% & 53.33% respectively) followed by in the month of December, January i.e. in winter (45.45% & 71.42% respectively) and lowest recorded in the month of August, September i.e. in rainy (12.5%) (Table No. 1). Seasonally maximum infection occurred in summer followed by winter and rainy season (Table No.2)

The seasonal occurrence of helminth parasites in the fish may also be due to the age of fish host and life cycle of the parasites. Ecological factors have been held widely responsible for the occurrence of the adults. Hence high prevalence occurs in summer followed by other seasons. Kennedy C.R. (1968, 1976, 1977) explained temperature, humidity and rainfall, feeding habits of host, availability of infective host and parasite maturation are responsible for influencing the parasitic infections. Pennuquick [1973], reported fishes and other animals were infected with large number of parasites in late winter to end of summer months, as environmental conditions are favorable in these months. The effect of climatic factors on helminthic infection reported by Lawrence [1970], Crofton and Esch [1971]. The considerable work on population dynamics were carried out by many authors, such as Esch G.W. [1977], Ram Reddy (1980), Jadhav BV, Bhure D.B (2006), Nitin Padwal (2011) Bhure D.B and Nanware S. S. (2014).

## CONCLUSION

After the analysis of data the present study can be concluded that, the maximum incidence of nematode *Camallanus* spp. parasites in *Mastacembelus armatus*. High infection of nematode parasites are occurred in summer seasons followed by winter where as low in monsoon season and This type of results indicated that environmental factors and feeding habitat are influencing the seasonality of parasitic infection either directly or indirectly.

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## REFERENCES:

- BHURE D.B and NANWARE S. S.(2014): Studies on prevalence of cestode parasites of Freshwater fish, *Channa punctatus* Journal of Entomology and Zoology Studies 2014; 2 (4): 283-285
- ESCH G.W. (1977): Regulation of parasitic population. Academic Press, INC. New York.
- GILLIAN STEPAK (2006): Human gastrointestinal nematode infections: are new control methods required?International Journal of Experimental Pathology 87(5),pp325-345
- JADHAV B.V, 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 2006; 12(2):143-148
- KENNEDY, C. R. (1968): Population biology of the Cestode *Caryophyllaeus* (Pallas, 1781) in dace, *Leuciscusleuciscus* L. of the river Avon. J. Parasitol. 54, 538-543
- KENNEDY, C. R. (1976): Ecological aspects of parasitology. North Holland publishing company Amsterdam 10xford.
- KENNEDY, C. R. (1977) (A): The regulation of fish parasite populations. In regulation of parasite population 61-109.
- LAWRENCE, J. L. (1970):Effect of season, host age and sex on endohelminths of *Castostomus commersoni*. J. Parasitol. 56:567-571.
- NITIN PADWAL (2011) Seasonal variation of intestinal *Trichuris* sp. in sheep and goats from Maharashtra State International Multidisciplinary Research Journal 2011, 1(12):17-18 ISSN: 2231-6302
- PENNYUICK, K.L (1973): "Seasonal variation in the parasite population of three spined Stickle backs, *Gasterosteus aculeatus* L".Parasitology, 63, 373-388
- RAM REDDY, G.B. (1980). Studies on the population dynamics of helminth parasites of certain lizards of Hyderabad Ph.D. thesis Osmania University, Hyderabad, India.
- YAMAGUTI, S. (1934): Cestode of fishes II. Acta Med. Okayamma 8 (1) : 1-78
- YAMAGUTI, S. (1959): Systema helminthum vol.III. The cestodes of Vertebrates, Inter science public. New York and London 1-860.

**Table No.1 Incidence of *Camallanus* Sp. from *Mastacembelus armatus*  
March 2015 - February 2016**

Name of month	No. of host examined	No. of host infected	No. of parasites collected	Prevalence %	Habitat
Mar.15	20	06	08	30	Intestine
Apr.15	14	07	09	50	-
May 15	15	08	10	53.33	Intestine
Jun. 15	10	00	00	00	Intestine
Jul. 15	05	00	00	00	Intestine
Aug.15	00	01	02	00	Intestine
Sept.15	08	01	02	12.5	Intestine
Oct.15	10	03	04	30	Intestine
Nov.15	10	03	04	30	Intestine
Dec.15	11	05	06	45.45	Intestine
Jan.16	07	05	05	71.42	Intestine
Feb.16	08	04	05	50	Intestine
<b>Total</b>	<b>118</b>	<b>43</b>	<b>55</b>	<b>372.7</b>	

**Table No.2 Influence of season on Nematode parasitic infection during  
March 2015 - February 2016**

Genera	Season	Incidence % of March 2015-February 2016
<i>Camallanus</i> spp.	Rainy	3.21%
	Winter	44.21%
	Summer	45.83%