



POPULATION DYNAMICS OF *SENGA* SP. (DOLLFUS, 1934) IN FRESH WATER FISHES FROM AURANGABAD REGION (M.S) INDIA

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ABSTRACT

The present communication deals with the population dynamics of *Senga* Sp. (Dollfus, 1934) in fresh water fishes from Aurangabad region (M.S) India during the period of June-18 to May-19. A total 124 *Senga* sp. were recorded from 140 fishes. The report summarizes the data of incidence, intensity, density and index of infection of *Senga* sp. from fresh water fishes with effect of environmental factors.

KEYWORDS : Aurangabad, Population dynamics, *Senga* sp.

INTRODUCTION

Fishes form an indispensable part in the ecosystem and act as valuable food items and source of income to humans. They play an imperative role to meet the nutritional requirements of common people due to their great palatability and high consumer appeal in India and neighboring countries. These edible fishes are known to harbour a number of cestode parasites which cause deterioration in their health, hence their market and nutritive value is affected. Parasite can have a wide range of impact on the ecology of their hosts in terms of health (Atme and Owen, 1967) behavior (Milinski 1984, Moore 1984) sexual selection (Howard and Minchella, 1990) Watve and Sukmar, 1977) and regulation of the host population (Freeland, 1983). Fish parasitic populations are known to differ, due to variation in the environment and host population (Dobson, 1985). For most of the fish parasites it is difficult to know, whether differences such as the presence or absence of parasites prevalence, intensity, density and index of infections, are due to the environmental factors or due to differences in host species, composition and their density (Koskivara et al., 1991). The present investigation deals with study of prevalence, intensity, density and index of infection of *Senga* sp. from fresh water fishes for three seasons' i.e. rainy, winter and summer during the year of June-2018 to May-2019.

MATERIAL AND METHODS

The freshwater fishes are collected from fish markets of different places of Aurangabad district. The cestodes were collected, preserved, processed to a permanent slide and identified under a compound microscope while drawings are made with the aid of camera lucida. The identification was made with the help of "Systema Helminthium" vol. II. "Cestode of vertebrates" by Yamaguti S. (1961).

Population dynamics of cestode parasites were determined by following formulae,

- 1) Incidence of infection-** It is the percentage of host infected by particular species of Cestode parasites. Observations are recorded annually and calculated by the following formula.

Infected hosts

$$\text{Incidence of Infection} = \frac{\text{Infected hosts}}{\text{Total hosts examined}} \times 100$$

- 2) Intensity of infection-** It takes into account the total number of worms of Cestode parasites in infected host population, observations are recorded annually and calculated by following formula.

Number of parasites collected in a sample

$$\text{Intensity of Infection} = \frac{\text{Number of parasites collected in a sample}}{\text{Number of infected hosts}}$$

- 3) Density of infection** – It is the measure of concentration of Cestode parasites per unit space (single host). Observations are recorded annually and calculated by following formula.

Number of parasites collected in a sample

$$\text{Density of Infection} = \frac{\text{Number of parasites collected in a sample}}{\text{Total hosts examined}}$$

Total hosts examined

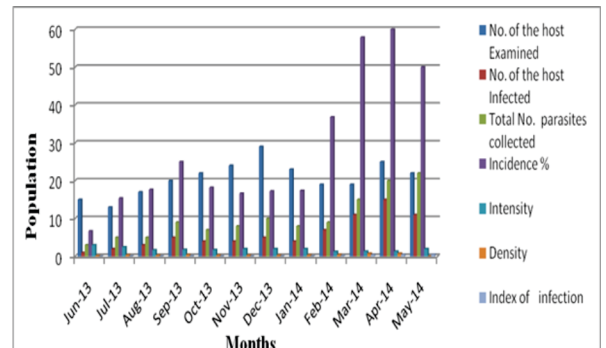
- 4) Index of infection** – It is calculated with the help of the formula given by Tenore and Zejda, 1974, observations are recorded annually and calculated by following formula.

No. of hosts infected x No. of parasite collected

$$\text{Index of Infection} = \frac{\text{No. of hosts infected} \times \text{No. of parasite collected}}{(\text{Total hosts examined})^2}$$

Table No.1:- The values of incidence, intensity, density and index of infection for *Senga* Sp. in the population of fresh water fishes from Aurangabad region during the period of June-2018-May-2019.

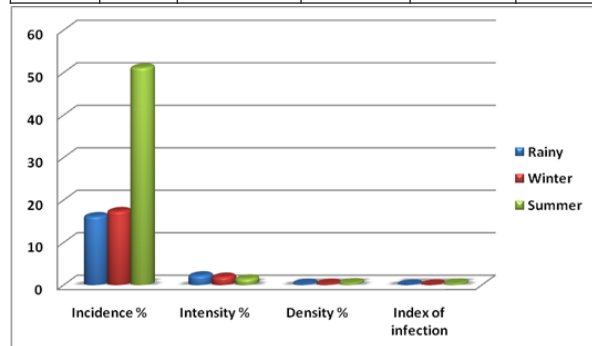
Name of Month/year	No. of the host Examined	No. of the host Infected	Total No. parasites collected	Incidence %	Intensity	Density	Index of infection
June-18	13	07	10	53.85	1.43	0.77	0.41
July-18	11	05	07	45.45	1.40	0.64	0.29
Aug-18	12	05	08	41.67	1.60	0.67	0.28
Sep-18	13	05	06	38.46	1.20	0.46	0.18
Oct-18	11	06	09	54.55	1.50	0.82	0.45
Nov-18	13	08	12	61.54	1.50	0.92	0.57
Dec-18	10	06	10	60	1.67	1	0.60
Jan-19	09	07	11	77.78	1.57	1.22	0.95
Feb-19	13	10	13	76.92	1.30	1	0.77
Mar-19	12	09	12	75	1.33	1	0.75
Apr-19	11	09	12	81.82	1.33	1.09	0.89
May-19	12	10	14	83.33	1.40	1.16	0.97
Total	140	87	124	62.14	1.43	0.89	0.55



Graph No.1:- The values of incidence, intensity, density and index of infection for *Senga* Sp. in the population of fresh water fishes from Aurangabad region during the period of June-2018-May-2019.

Table No. 2:- The influence of season on the parasitic infection (Senga Sp.)

Genera	Season	Incidence %	Intensity %	Density %	Index of infection
Senga Sp.	Rainy	44.90	1.41	0.63	0.28
	Winter	62.79	1.56	0.98	0.61
	Summer	79.17	1.34	1.06	0.84

**Graph No. 2:- The influence of season on the parasitic infection (Senga Sp.)**

RESULT AND DISCUSSION

The present study indicate that out of 248 freshwater fishes (*Mastacembelus armatus*, Shinde,1968), 72 are infected with *Circomoncobothrium* Sp. Cestode parasites. A total 121 cestode parasites are collected from these fishes. The seasonal variation of *Circomoncobothrium* Sp. show the maximum infection i.e. 64 cestode parasites occur in summer seasons followed by 33 parasites in winter season whereas lower infection 22 parasites in rainy season. The development of parasite needs high temperature and sufficient moisture. Environmental variations are in seasonal difference in the incidence of diseases. Hence high incident occurs in summer season followed by winter season and lower in rainy season. Intensity of infection high in rainy season followed by winter and low in summer season. But density of infection and index of infection is high in summer season followed by winter season and lower in rainy season.

The present investigation shows that the occurrence of infection was host specific because the morphological, physiological and ecological factors affect the host specificity. The morphological factors are those which like a parasite with its host at the site of attachment (Agarwal, 2006). The ecological factors means distribution and environment of the host and Physiological factors means the diet and mode of feeding (Kennedy, 1976). Jadhav and Bhure (2006) also explained the distribution of parasites are host specific. Sunita Borde and Sushil Jawale (2012) also explained the population dynamics of Caryophyllidean tapeworms and Sandeep Anarese, Amol Thosar and Sunita Borde (2014) studied the population dynamics of *Uncibilocularis* Sp. (Southwell, 1925) in *Dasyatis walga*. This type of result indicates the morphological, physiological and ecological factor affects the distribution of parasites.

CONCLUSION

After the study of present data it can be concluded that the high infection of *Circomoncobothrium* Sp. occurred in summer season followed by winter season whereas low in rainy season. This type of result indicates that environmental factor and feeding habitat are influencing the seasonality of parasitic infection either directly or indirectly.

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