



## Seasonal Variation In Prevalence Of Nematode Parasites In *Coilia Dussumieri* From Uran, West Coast Of India

Aamod N. Thakkar

\*Veer Wajekar A. S. C. College, Mahalan Vibhag,,Phunde, Tal. Uran, Dist. Raigad, Maharashtra

**Abstract:** The *Coilia dussumieri* is a common marketable food fish, commonly consumed by locals of Uran, Raigad district. However, there is currently very little information on the levels of infection with nematode parasites in this economically important marine fish. The aims of the present study are to determine the study of the seasonal variation on the occurrence of nematode parasites of *Coilia dussumieri* from Uran coast.

**Keywords:** Nematode, Marine, fish, prevalence, seasonal

### Introduction:

A large proportion of proteins obtained from animal sources come from fishes. Out of total worldwide protein obtained by animal sources, 25 % alone is contributed by fish and shellfish thus; fish is one of the most valuable sources of protein in food (N. Kumari et. al; 2018). *Coilia dussumieri* is common in the estuarine coast of Bombay, is commercially important and is landed in appreciable quantities throughout the year (Madhav Gadgil 1967). The parasite assemblages of marine fishes include the larval stages of several groups of parasite helminths that use fish as intermediate hosts (José and Robert 2004)

Fish is also prone to diseases like parasitism. It can also be a good host for parasite multiplication that can be acquired by animals and humans through the ingestion of raw or inadequately cooked fish containing the larvae of the parasite (Salcedo NB et. al; 2009). Fish harbor nematodes as the intermediate or reservoir hosts for larval stages and as definitive hosts in which sexual maturity is attained for others. Nematode parasites of fish are also important from human health point of view. The nematode larvae can be ingested by humans with under-cooked fish flesh which then develop to morphologically mature but sexually immature worms thus, showing zoonotic potential (Piyaratu, P and Samranwetaya, P., 1971, Punyagupta, S. 1978). In recent years, knowledge about parasites of fish has been progressed due to their impact on growth and behavior of fish and economic losses (Barassa et al. 2003). Nematode causes an economic threat to the market value of fish, through consumer attitudes towards the presence of these parasites within food products. Muluken et. al; 2020). The present study deals with the prevalence and intensity of infections of the nematode parasite in the fish *Coilia dussumieri* for a period of 12 months extending from May 2021 to April 2022. The water temperature, one of the significant abiotic variables for seasonal variation has also been taken into account to study the occurrence of the nematode parasites of *Coilia dussumieri* from Uran West coast of India.

### Materials and Methods:

For the collection of parasites every month 10 species of *C. dussumieri* from Uran coast, Raigad District. The Fishes of different sizes were routinely collected from as sample from local fisherman from Uran coast DURING 2022. All samples of fish were evaluated visually and postmortem examination was done using appropriate postmortem kits using standard evisceration technique previously described by Zhokhov et. al;2007. Individual fish specimens were dissected and body cavity of the fish was examined and then cut opened for examination of parasites. The internal body parts were thoroughly examined for the occurrence of parasites collected parasites were preserved in 70% alcohol containing 10% of glycerin; Identification of parasites was done following standard keys in the literature (Amlacher et. al; 1971). The number of infected host male and female and the number of parasites collected was noted. . The sex of the fish was determined by visual observation on the tail fin in which female bearing more elongated hairy fin than male. (Mahapatra et. al; 2015)

### Results and Discussion:

From the recorded data, we have analyzed the incidence of nematode infection in the fish host *Coilia dussumieri* from Uran West coast of India, seasonally.

Table 1, shows the seasonal prevalence, intensity and abundance of infection. Observations of the present studies shows that incidence of infection is different though the parasite has been recorded from the fish species throughout the year.

In this study we examined 394 *Coilia dussumieri* fish, out of which 177 were infected.

• **Table 1**, shows the seasonal prevalence, intensity and abundance of infection in the fish host *Coilia dussumieri* from Uran, West coast of India.

Season	Water Temp. °C	No. of Fish Examined	No. Of Fish infected	No. of nematode parasites	Prevalence% No. of fish infected	Intensity	abundance
Summer May June July	29.6-32.8	114	68	291	59.64	4.27	2.55
Autumn Aug. Sept. October	28.4-30.8	96	37	127	38.54	3.27	1.32
Winter Nov. Dec. January	21.6- 24.4	72	19	56	26.38	2.47	0.77
Spring Feb. March April	26.8- 31.6	112	53	163	47.32	3.07	1.45

**Table 2** prevalence of internal nematode in relation to sex in the fish host *Coilia dussumieri* from Uran West coast of India

Sex	No. of fish examined	No. of fish infected	Prevalence (%)
Female	201	98	48.75
Male	193	79	40.93
Total	394	177	44.84

The prevalence of infection was observed highest in the month of May when the average sea water temperature was 31.2°C (Table-1). During present study, nematode parasitism incidence in fish was highest in summer and lowest prevalence was found in winter (Table-1). The infection rate was a highest during the summer (59.64%), lowest in winter (26.38%), medium in autumn (38.54 %), and spring (47.32%). Similar results were observed by Ismen and Bingel (1999) reported highest infection rate of nematodes in warm season than in colder period in the Whiting *Merlangius merlangus euxinus* off Turkish coast. P. Rosina George (2021) also reported there was correlation between sea water temperature and prevalence of nematode infection. Incidence of nematode parasitism in fish was highest in summer (March-June) and lowest prevalence was found in winter (November-February). Similarly Vincent and Font (2003) reported that the prevalence, mean abundance and mean intensity of nematodes were higher in summer than in winter. According to Genc et al., (2005) the parasitic infection showed seasonal variations with the highest prevalence in the summer season. The mean intensity and abundance of nematode infection in present study showed high increase in summer whereas decreasing to lowest in winter. The results are in line with Sheema et al., (2015) and Ritika et al., (2012) have suggested that abundance of helminthes increase with the rising temperature in summer and slow down during winter.

Although male and female were almost equal in number, females tended to harbor more parasites (Table no. 2). Similar findings have been reported with a higher prevalence rate encountered in female fish than male Shaheena Qasim and Zarrien Ayub (2012). The main reason for the differences in parasitic load with sex is thought to be physiological. However, endoparasites have been reported to infest the two sexes differentially because male and female fish often have different feeding habits (Rohde, 1993). Female fish especially gravid ones are susceptible to helminth infections as this physiological state could reduce the resistance of the fish to infection by the parasites Akinsanya B, et. al; (2009).

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### Conclusion:

*Coilia dussumieri* is one of the common fishery resources along west coast, but it has also been considered an important agent of nematode. However, our present knowledge of the species composition, prevalence of parasites in *C. dussumieri* remains very limited. This high infection level of *Coilia dussumieri* suggests a risk of nematodes or associated allergies for people consuming raw or poorly cooked raw fish originating from this marine area. The findings of the present study provide important basic data on the occurrence and infection parameters of nematodes in this economically important marine fish.

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