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Studies on prevalence of cestode parasites of freshwater fish, *Channa punctatus*

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Abstract

The present investigation deals with the preliminary survey of three Piscean cestode parasites viz. *Senga sp.*, *Gangesia sp.*, *Proteocephalus sp.* collected from the intestine of a *Channa punctatus* at different collection sites of Nanded district (M.S.) India during June, 2013 to May, 2014. The high incidence of infection of all these species *Senga sp.*, *Gangesia sp.*, *Proteocephalus sp.* was recorded in summer season (76.66 %, 73.33 % & 70.00 % respectively) followed by winter season (65.21 %, 52.17% & 56.52% respectively) whereas infection was low in monsoon season (36.84%, 26.31% & 31.57% respectively). The results of present study clearly indicate that environmental factors and feeding habitat influence the seasonality of parasitic infection either directly or indirectly.

Keywords: Cestode parasite, *Channa punctatus*, *Gangesia sp.*, Nanded, *Proteocephalus sp.* and *Senga sp.*

1. Introduction

Parasites are extremely abundant and diverse in nature, representing a substantial portion of global biodiversity. Fishes are important components of ecosystem from ecological, medicinal, nutritional and economical point of view. These fishes are parasitized by helminth parasites, which reduce the food value of host fish. Study of helminth parasites is therefore an urgent necessity today. Helminth infections are very common in people who consume improperly cooked meat, unhygienic habits and poor sanitation. These helminthic infection leads to various disorders i.e. anemia. Population investigation is necessary to provide data for the prediction of integrated methods to achieve the regulation of numbers of harmful parasites (Kennedy)^[1, 2]. Notable contribution made by Dobson^[3], Dogiel *et al.*^[4, 5], Euzéby^[6], Anderson^[7], Moller, H^[8] and Rajeshwar Rao^[9].

Less work has been done on cestodes parasites of *Channa* species in Nanded, M.S. India. Results of present study, therefore, are expected to be helpful for future research on piscian cestodes in this region. Keeping in view, the importance of these Piscean cestode parasites, present study was undertaken to investigate and evaluate prevalence of cestode parasites of freshwater fish *Channa punctatus* and distribution of three Piscean cestodes of genus *Senga sp.*, *Gangesia sp.*, *Proteocephalus sp.* collected during annual cycle June, 2013 to May, 2014.

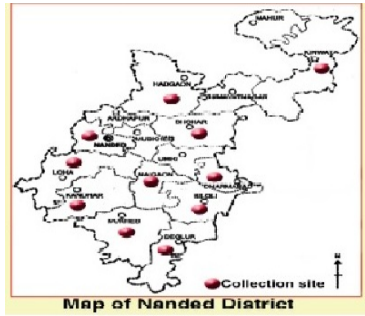
2. Materials and Methods**2.1 Study area**

Study was conducted in different collection sites of Nanded district. Nanded is situated in south eastern part of Maharashtra State, lies between 18.15 to 19.55 North latitudes and 97.07 to 98.15 East longitude. It covers an area of 10,528 sq. km.

In the present study, intestines of *Channa punctatus* were examined for cestode infection during the period of June, 2013 to May, 2014 from Nanded Region, M. S., India. Cestodes were collected, preserved in hot 4% formalin, dehydrated in various alcoholic grades, stained with Borax carmine, cleared in xylene and mounted in D.P.X. These Cestodes were identified by standard methods (Schmidt Gerald D.^[10], Yamaguti, S.^[11], Wardle, R.A., Mcleod, J.A. and Radinovsky^[12], Khalil, Jones and Bray^[13], and Hiware, Jadhav and Mohekar^[14]). On taxonomic observations the Cestodes are identified as *Senga sp.*, *Gangesia sp.* and *Proteocephalus sp.* Obtained data were recorded; processed for study of seasonal variation.

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Channa punctatus

3. Results and Discussion

Results of present study on prevalence of piscine cestodes are presented in Table 01, 02 & 03. Three species of cestode parasites was recorded as *Senga sp.*, *Gangesia sp.* and *Proteocephalus sp.* It was found that, high incidence of

infection of all these species were recorded in summer (76.66 %, 73.33% & 70.00%) followed by winter (65.21%, 52.17% & 56.52%) whereas infection was low in monsoon season (36.84%, 26.31% & 31.57%).

Table 1: Prevalence of *Senga sp.* of *Channa punctatus* during June, 2013 to May, 2014.

Seasons	No. of the host Examined	No. of the host Infected	Total No. parasites collected	Incidence %
Monsoon (June, 2013 –Sept., 2013)	19	07	10	36.84%
Winter (Oct.,2013- Jan., 2014)	23	15	18	65.21%
Summer, (Feb.,2014- May,2014)	30	23	27	76.66%

Table 2: Prevalence of *Gangesia sp.* of *Channa punctatus* during June, 2013 to May, 2014.

Seasons	No. of the host Examined	No. of the host Infected	Total No. parasites collected	Incidence %
Monsoon (June, 2013 –Sept., 2013)	19	05	07	26.31%
Winter (Oct.,2013- Jan., 2014)	23	12	14	52.17%
Summer, (Feb.,2014- May,2014)	30	22	25	73.33%

Table 3: Prevalence of *Proteocephalus sp.* of *Channa punctatus* during June, 2013 to May, 2014.

Seasons	No. of the host Examined	No. of the host Infected	Total No. parasites collected	Incidence %
Monsoon (June, 2013 –Sept., 2013)	19	06	08	31.57%
Winter (Oct.,2013- Jan., 2014)	23	13	15	56.52%
Summer, (Feb.,2014- May,2014)	30	21	24	70.00%

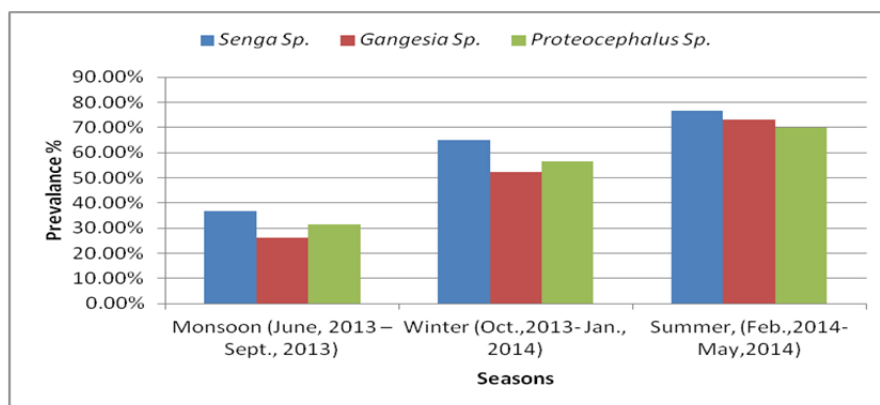


Fig 1: Graph showing prevalence of Piscian tapeworms of *Channa punctatus* during June, 2013 to May, 2014.

The results of present study are in agreement with Bhure *et al.*,^[15] noticed high incidence (51.78%), intensity (1.18%) and density (0.613%) of *Rhabdochona sp.* in summer followed by winter and rainy season. Bhure *et al.*,^[16] recorded high incidence, intensity, density and index of infection of *Siluro taenia raoii* in summer followed by winter whereas infection was low in monsoon. Kasar *et al.*,^[17] reported high prevalence of Cestode *Valipora singhii* in summer. Bhure *et al.*,^[18] studied diversity and prevalence of avian cestodes and reported high prevalence in summer where as low in monsoon season. Bhure and Nanware,^[19] recorded high incidence of infection of *Cotugnia dignopora*, *Cotugnia diamarae* and *Railletina (R.) domestica* in summer (75%, 67.85 % & 71.42%) followed by winter (60%, 52% & 48%) whereas infection was low in monsoon season (38.09%, 33.33% & 38.09%).

Jadhav and Bhure,^[20] reported high temperature, low rainfall and sufficient moisture are necessary for development of parasite. Hence high prevalence occurs in summer followed by other seasons. Kennedy C.R.^[1, 2, 21, 22] explained temperature, humidity and rainfall, feeding habits of host, availability of infective host and parasite maturation are responsible for influencing the parasitic infections. Pennuyuck^[23], 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.

4. Conclusion

In the present study, recorded data shows high incidence of infections of all the cestode species were recorded in summer (Feb., 2014-May, 2014) followed by winter (Oct., 2013- Jan., 2014) where as low in monsoon season (June, 2013 –Sept., 2013). The results clearly indicate that environmental factors and feeding habitat influence the seasonality of parasitic infection either directly or indirectly.

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