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STUDIES ON PARASITES IN CYPRINUS ROHITA, (ROHU) IN GODAVARI RIVER FROM JAYAKWADI DAM IN AURANGABAD DISTRICT MAHARASHTRA

[1]*Ashwini Subhash Netane* *, [2] *Rajendra R .Dandawate*

[1]Department of Zoology, Dr Babasaheb Ambedkar Marathwada University, Aurangabad MS

[2]Department of Zoology, Mula Education Society's Arts Commerce and Science Collage Sonai Tal-Newasa, Dist- Ahmednagar MS

Abstract:

Fishes are the nutritious food for many in many regions of India, including Maharashtra. Godavari River in Marathwada region is one of the rich sources of freshwater fishes. The river rises in. northwestern Maharastra state in western ghat range, only 80km from the Arabian Sea and flows for most of its course generally eastward across the broad platue of the Deccan. Most commonly observed freshwater fishes are Rohu, Mrigal and Catla. Cyprinus rohita is most demandable one among them. Hence the study was constrained to this species. Various kinds of skin diseases, alimentary disease, loss of weight , and lack of palatability and decline of fish maturity are some of the problems faced by fish farmers in this area concerned with Cyprinus rohita. A casual discussion with the local fisherman revealed that they encountered all these problems and find difficulty in maintaining their daily earning. Total 1000 fishes were of different species analyzed for both ectoparasites and endoparasites. The result shows that Rohu was infected with many ciliophorans, monogeneans, cnidarians, nematodes and trematode parasites predominantly on body surface, and digestive tract.

Keywords: Gill, intestine, Godavari River (Marathwada), Parasites, skin, gills

Introduction

Cyprinus rohita (Hamilton,1822) is the natural diurnal inhabitant of river, streams, canals, of India, china, Thiland and Vietnam. it is also found in lakes, ox-bow lakes, ponds, ditch and similar water bodies. Mainly middle dweller carp species but normally it occupies the column-region of the aquatic resources and reservoirs. Its food comprises crustaceans and insects larvae in early stages [1]. The percentage composition of food of Rohu may be algae higher plant protozoan crustaceans and mud and sand[1]. The fecundity varies from 2,20,000 to 30,00,000, depending upon fish size and ovary weight [2] whereas[3] reported that average fecundity ranges from 2,50,000-3,50,000 eggs/kg body weight. Never breads in ponds, naturally it spawns in rivers system condition during the monsoon Except by hypophysation to which it responds quickly[4].

Wild seed is more popular in fish grower for high growth rate then hatchery produced seeds. Under pond culture condition it grows up to 1000 g within a single year[3]. The maximum recorded age 15years, total length 300 cm and weight 50 kg [6]. Rohu is bottom feeder and prefers to feed on plant matter including decaying vegetation. This fish is available in the study area. Not listed in IUCN Red list[7]. It is one of the main fish used for culturing by fish farmers in Jayakwadi dam Maharashtra. The production from culture is badly affected by infestation of parasites. Hoffman [7] correlated the health of fishes and parasitic infestation [8]. The parasites multiply under suitable condition of temperature, host physiology and water quality of the river or ponds [8].

Various study related to the affect of fish parasite on fishes are registered [13-14]. (Occurrence of helminthes parasites in *C..rohita* is reported by [14,]. In India reported cases of helminthes in *L.rohita* is also available ·The same cases were reported by Bilqees and Khan in Pakistan [19]. From the various study related with parasitic infestation to *L.rohita* shows a big lacuna considering Godavari river River, especially the segment in Aurangabad District May, 2019. The season was selected to avoid the dilution of pollution by rain water in June to September, and this season is non-capturing period as the river was flooded heavily. Total 1000 fishes were assessed for the parasitic infestation. The fishes were collected from local market in Paithan City, by confirming that the fishes are captured from the study area.

The duration of collection and capturing is only 4- 5 hours. The fishes were subjected to physical examination of length and body weight. The fishes were examined for ectoparasites by hand lens and microscopic examination of the mucilage and skin scrapping. Each and every fish were then dissected to find out the endoparasites of internal organs. The organs were kept in physiological saline (4% NaCl). The intestinal and stomach parasites were examined by longitudinal incision from posterior to anterior direction. All the collected parasites were fixed in glycerin and identified according to Chandra [20]. Prevalence, abundance and mean density was find out by method described [21].

I.

$$\text{Prevalence (\%)} = \frac{\text{No.of infected fishes x 100}}{\text{Total No.of fish examined}}$$

II.

$$\text{Mean Intensity (Unit)} = \frac{\text{No.of colleceted parasites}}{\text{No.of infected fishe}}$$

II.

$$\text{Abundance (Unit)} = \frac{\text{No.of parasites}}{\text{Number of fish examined}}$$

The total protein content was determined in wet homogenate muscles tissues using Lowry et al method [19]. Total lipid content was extracted from tissue using a chloroform-methanol mixture (2 : 1) and were determined according Bligh and Dyer. Glycogen content was measured by anthrone reagent as described by Carroll et al[20]. Results were expressed in mg · g-1 w.w.(wet weight).

Statistical analysis: Statistical analysis was performed by using SSP software and checked for its validity by manual.

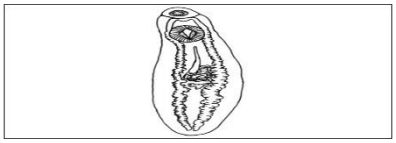
Results

The study conducted in September to March month of the year 2019 The climate was humid; water level in the river was at the bottom. The effluents from domestic and farmland dumped in bulk volume. Industrial effluent was at the least due to the legal ban. In the study time and in all the organs studied shows low level infection of parasites (Table 1). The low level infection may be due to the fact that fish capturing is a continuous process in this

river and replenishment of fishes happens frequently (No data, Information collected from local fishermen). The parasites mainly belong to ciliphora, platyhelminthes, arthropod, cnideria and aschelminthes (Table 1). A comparative heavy infection is observed in intestine and stomach (Platyhelminthes and aschelminthes). Ciliophoran parasites prefer mostly gills and skin. The prevalence percentage is observed more in the case Trichodins sp. And least in *Argulus* (Fish lice). Mean intensity is observed maximum in Ciliophora, and percentage of abundance in trematod. A tricking observation is that all infected fishes showed reduction in total protein in liver and muscle (Table 2), lipid (Table 3) and glycogen (Table 4).

The reduction in glycogen in muscle indicates that fishes are in fatigue due to lack of energy. This is due to the host-parasitic interaction leading to the depletion of energy source. The decrease in protein, lipid and glycogen is more in liver comparing to muscle. The decrease in protein and lipid indicating that parasite negatively influence the overall metabolism and reduction in the body weight. To make a profitable business healthy fishes with good body weight is essentially necessary. Hence controlling of the parasitic infection and preventing their spreading is a prerequisite. Even though infection is low range ideal condition for the parasite in the future may cause mass destruction and other menace followed.

Tape worm



Trematode parasite

Discussion

In the present work the parasitic infection in the fish .C.rohita involves, monogeneans, ttrematode, nematode, cniderian and Arthropdan species were *Trichodins sp, Chilodonella, Gyrodactylus, Eucreadium, Fellodistomum, Camallanus, Myxobolus, Argulus (Fish lice)*.The highest prevalence was observed for *Trichodina sps* followed by nematodes and trematodes. Seasonal variation of five species of helminthes was reported [12]. In our study mean intensity and abundance was shown by *Chilodonella* and

The occurrence of *Dactylogyrus sp*. In Indian C.rohita was reported [16,17]. Malhaotra and Chauhan[18] reported *B.teleosti* from digestive tract of L.rohita at Khoh and Nayar river system in the Garhwal). Ten species of parasites including seven species of ectoparasites and three species of endoparasites in *L.rohita* in Rajasthan and Bangladesh was reported [25]. To compare the study of others workers on parasitic infection in natural water bodies regarding L.rohita our result is in agreement with them. The difference observed was fish farming frequency as the water bodies in Krishna River in Sangli district is very constrained and pollution is restricted to an agreeable limit, the parasitic prevalence even thou shown same trend in other studies, the frequency is low.

Table 1: Parasites in L.rohita (Ham.) Collected from Krishna River segment in Sangli district During the study Period

S. No.	Parasites Classified	Genus	Site of Infection	No. of Infected Fish	No. of collected Paarsite	Prevalence (%)	Mean intensity	Abundance (%)
1	Phyl:Ciliophora Class:Oligohymenoph orea Family: Trichodinidae	Trichodins sp.	Gills and Skin	4	3	6.94	0.75	0.006
2	Platyhelminthes Monogenia	*Dactylogyrus*	Gill	9	9	1.8	1.0	0.018
3	Arthropoda Arguloida	*Argulus (Fish lice)*	Skin	3	4	0.6	1.3	0.008
4	Cnideria Bivalvulida	*Myxobolus*	Skin & gills	4	6	0.8	1.5	0.012
5	Platyhelminthes Monogenia	*Gyrodactylus*	Skin	7	9	1.8	1.3	0.018
6	Aschelminthes Nematoda	*Camallanus*	Intestine	10	11	2.0	1.1	0.022
7	Platyhelminthes Trematoda	*Fellodistomum*	Stomach	8	9	2.0	1.13	0.018

Table 2: Protein content (mg g^{-1}) of Liver and Muscle of non parasite infected and infected *C. rohita*

Fish state	Site of infection	Liver		Muscle	
		$\bar{x} \pm s$	Range	$\bar{x} \pm s$	Range
Non infected	-	175.2+2.1	150.1-166.4	280.3+ 4.2	270.3-279.4
Infected	Gills	145.4+3.2	130.3-141.3	262.1+2.1	255.3-265.3
Infected	Skin	143.4+3.2	129.3-147.3	262.1+2.1	256.3-264.3
Infected	Stomach	140.2+2.1	123.2-139.3	222.2+1.2	218.2-224.3
Infected	Intestine	130.1+ 3.2	120.2-132.2	213.3+2.5	202.2-216.4

Table 3: Lipid content (mg g^{-1}) of Liver and Muscle of non parasite infected and infected *L. rohita*

Fish state	Site of infection	Liver		Muscle	
		$\bar{x} \pm s$	Range	$\bar{x} \pm s$	Range
Non infected	-	320.2+8.4	321.2-335.4	80.2+2.6	73.3-85.6
Infected	Gills	300.3+2.5	281.5-290.6	67.2+5.4	63.3-68.9
Infected	Skin	300.5+1.5	289.1-295.2	70.1+2.4	70.1-70.6
Infected	Stomach	223.1+4.1	216.4-225.4	40.4+1.4	37.6-42.1
Infected	Intestine	216.2+6.1	200.2-219.2	30.2+2.3	27.1-32.4

Table 4: Glycogen content (mg g^{-1}) of Liver and Muscle of non parasite infected and infected *L. rohita*

Fish state	Site of infection	Liver		Muscle	
		$\bar{x} \pm s$	Range	$\bar{x} \pm s$	Range
Non infected	-	8.1+0.7	8.4-10.2	7.1+2.1	6.0-6.9
Infected	Gills	7.8+2.7	7.2-7.1	3.3+2.8	5.1-4.9
Infected	Skin	6.7+1.4	5.5-7.1	4.1+1.4	5.9-4.5
Infected	Stomach	3.2+3.2	25-4.6	3.1+2.2	1.9-2.5
Infected	Intestine	4.9+1.2	3.6+3.1	1.0+1.2	1.9-2.2

Conclusion

From above work it is concluded that Major carps from Jaykwadi dam mainly affected by Ecto and Endo parasites. This is also main cause of fish Scarcity of Jaykwadi Dam Dist Aurangabad-

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