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## **Metazoan parasite study of Wallago attu from Sunkesula Dam, Kurnool District, Andhra Pradesh**

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### **Abstract:**

The present study was designed to investigate metazoan parasites from freshwater cat fish Wallago attu. Nearly 123 specimens of Wallago attu were collected from Sunkesula reservoir from January 2023 to February 2024. By the study it was observed that the fish were infested with three species of ectoparasites namely ergasilus malnadensis (copepod), Thaparocleidus indicus, Thaparocleidus wallagonius (Monogeneaus) and one endoparasite namely Isoparorchis hypselobagri (Trematode) (Digena). The present study indicates the correlation between the fish size and parasitic richness. It was observed that in small size host fishes the parasitic number is less and in large size host fishes the parasitic number is more.

### **Keyword:**

Metazoan parasites, Parasitic diversity, Parasitic richness, Sunkesela reservoir, Wallago attu.

### **Introduction:**

Aquaculture in the country holds tremendous potential to contribute towards the food security and for augmenting export earnings.

The fish production system in India has two main sources viz. The fish grown in captivity and

The fish caught from the wild stock.

There are also some intermediate forms of production such as

Culture based fisheries- fishes are stocked in reservoirs and lakes and caught back after they grow by utilizing natural food.

Enhanced capture fishery- augmenting the fish stock in capture fisheries by stocking support.

Capture based aquaculture- Fish seed collected from wild are grown in captivity

The three methods- Culture fisheries, Culture based aquaculture and enhanced capture fisheries hold huge potential to achieve a significant increase in fish productivity and production to meet the growing demand of fish as a protein source at affordable price besides providing livelihood for over 400 million people.

But, the intensification of culture practices, though helped to increase production levels, but also led to the outbreaks of viral, bacterial and parasitic diseases.

Many diseases result from intensification of culture practices without basic perception of the intricate balance between host, pathogen and environment, thus challenging the sustainable development of aquaculture.

Hence the present study is aimed for the identification of parasitic fauna of Wallago attu from Sunkesula reservoir of Kurnool district, Andhra Pradesh studies on parasitic fauna of fresh water fishes from Sunkesula reservoir of Kurnool district is not yet done. The present study was an attempt to examine the ecto and endo parasites residing in the fresh water cat fish Wallago attu from Sunkesula reservoir of Kurnool district, Andhra Pradesh.

## Materials and Methods:

123 fish samples of Wallago attu were collected from Sunkesula reservoir from January 2023 to February 2024.

Gills of the fish samples were carefully removed, the gill filaments were carefully teased, and the contents were observed under the stereo zoom microscope for ectoparasites.

After collecting the ectoparasites, each fish was cut open with a mid ventral incision and the visceral organs like heart, stomach, liver and spiral intestine were examined thoroughly for the endoparasites namely, digeneans, cestodes, nematodes and acanthocephalans.

Ectoparasites like copepods, isopods and monogeneans parasites were fixed in 10% formalin.

For the purpose of identification, these parasites were kept in cavity blocks with a few drops of lactic acid for 12– 24 hours for clearing.

Lactic acid acts as a good clearing fluid. For detailed study, one parasite from each group was dissected, mouthparts and appendages were separated and diagrams were drawn with the aid of drawing tube attachment.

Single worms are kept in the centre of the slide in a small drop of water and cover slip is placed and then water is removed using filter paper and glycerine is added underneath the cover slip and all the four corners are sealed with a nail enamel.

Monogeneans are collected with the help of small pipettes under stereozoom microscope.

For preservation, 70% ethanol or loss fluid (9 parts 70% ethanol and 1 part glycerol) was heated in a test tube and was poured over the nematodes in a petridish devoid of water. Parasites uncoil and killed instantaneously and were finally transferred into bottles containing a mixture of 70% ethanol and glycerol (3:1).

For the study of histology, infected tissues of Wallago attu like intestine, gills and swim bladder were fixed in 90% formalin.

Uninfected (control) tissues were also fixed separately to study the comparison between control tissue and infected tissues.

The fixatives were washed thoroughly with tap water and dehydrated in graded series of alcohols (70%, 90%, 95% and 100%) and cleared in xylene.

After that infiltrated with paraffin wax at 58° C

Blocks will be prepared for the section cuttings longitudinal and transverse sections of 4-8  $\mu$  thickness were taken with the aid of Yorco YSI 115 rotary microtome.

The section obtained were ribbon like shape and placed on warm slider to get free from wax.

Sections were de waxed and hydrated through descending grades of ethanol to water.

Slides were initially stained in haematoxylin, and dehydrated in 95% alcohol cleared in xylene and mounted in Canada balsam and observed under the light microscope.

### Results and Discussion:

4 Metazoan parasitic species were identified from *Wallago attu*. From the results, it was observed that, Monogeneans occupied the first place in infesting the host fish, next places were occupied by the Trematodes and copepods. The ecto parasites (*Thaparocleidus indicus*, *Thaparocleidus Wallagonius*, *Ergasilus malnadensis*) usually inhabit the gills and they are found clinging to the gill filaments and cause focal necrosis at the point of attachment endo parasites (*Isoparorchis hypselobargi*) usually inhabit the swim bladder and they are found attached to the walls of the swim bladder with their suckers. These parasites release a lot black excretory material which might affect the efficacy of swim bladder function.

Most fish in the wild carry some parasites. These are some times obvious but more often or difficult to detect other than by specialist techniques and usually appear to have little effect on the host fish. However, in times of stress resistance of the fish is often lowered and some parasites may greatly increase in abundance and affect the health of the fish. In this situation fish will often lose condition making them more susceptible to predation or may even die from the effects of the parasites.

Fish which are injured in some way, such as after an attack by a predator, may carry a wound which is then infected by a parasite.

Name of the Host species: *Wallago attu*

No. of fish samples collected for study : 123

Parasitic species collected from *Wallago attu* during the study period.

Name of the parasite	No.of fishes infested	No.of parasites	Prevalance
<b>Monogenean</b>			
1. Thaparocleidus indicus	60	130	48.78
2. Thaparocleidus wallagonius	58	110	47.15
<b>Trematode</b>			
1. Isoparorchis hypselobargi	45	350	36.58
<b>Copepod</b>			
1. Ergasilus Malnadensis	37	75	30.08

## Correlation between size and parasitic number in wallago attu

Name of the host fish	No.of fishes collected		Species of parasite	No.of parasites
	Fish size	No.of collected		
Wallago attu	76 cm	20	Thaparocleidus	27
	85 cm	20	indicus	45
	90 cm	20		58
	78 cm	20	Thaoprocleidus	30
	84 cm	20	wallagonius	35
	94 cm	18		45
	80 cm	15	Isoparorchis	90
	88 cm	15	hypselobargi	120
	95 cm	15		140

	80 cm	12	Ergasilus malnadensis	14
	88 cm	14		28
	95 cm	11		33

### Conclusion:

The concept of parasite has changed in the recent years. They are important and integral part of the ecosystem conveying information not only on environment stress, trophic structure and function but also on bio-diversity. Parasites are useful indicators of ecosystem stability. Fish parasites formed an important part of the aquatic biodiversity and thereby show close correlation with the changes of both the external and internal environment of the hosts.

Some recent investigations point towards the manifold importance of the study of fish parasites as biological indicators.

Indirectly they serve as parameters to assess the extent of damage caused by human activities as a result of over exploitation of marine and fresh water bodies used as dumping grounds which combined together with the effects of climate change on the aquatic ecosystem sends a warning signal.

In developing countries where the fishery industry is an important commercial aspect with millions being depend on it, such studies are very important.

I contemplate that the information about the parasitic fauna (Monogeneans, Trematodes, copepads) given by me in the present study may helpful for the upcoming researchers who are going to work on fresh water fishes in Kurnool district, Andhra Pradesh.

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