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Research Paper

**DIVERSITY OF HELMINTHS IN THE GUT OF *MYSTUS BLEEKERI* AND
OREOCHROMIS MOSSAMBICUS FROM THE PRAVARA RIVER, AHILYANAGAR
DISTRICT, MAHARASHTRA**

S. A. Kawade

Department of Zoology,
Rao Bahadur Narayanrao Borawake College, Shrirampur,
Dist.: Ahilyanagar – 413709, Maharashtra, India
Affiliated to Savitribai Phule Pune University, Pune, India
Corresponding Author: sandip.kawade@gmail.com

ABSTRACT

The present investigation examines the diversity and infection dynamics of gastrointestinal helminths in two ecologically important freshwater fishes, *Mystus bleekeri* and *Oreochromis mossambicus*, collected from the Pravara River, Maharashtra. Sampling was conducted over a one-year period (January 2023–December 2024) to evaluate seasonal variation in parasite prevalence and intensity. A total of 180 specimens (90 individuals of each species) were analyzed. Helminth parasites belonging to Trematoda, Cestoda, and Nematoda were identified. *Mystus bleekeri* exhibited comparatively higher parasite richness due to its benthic feeding habit, whereas *O. mossambicus* showed moderate infection levels. Seasonal peaks in infection were recorded during the monsoon and post-monsoon months. The findings provide valuable baseline data on host-specific parasite assemblages and contribute to understanding fish health in the Pravara River ecosystem.

Keywords: Pravara River; *Mystus bleekeri*; *Oreochromis mossambicus*; Helminth infection; Seasonal dynamics.

INTRODUCTION

Helminth parasites constitute a major component of aquatic biodiversity and play a significant role in trophic interactions within freshwater ecosystems (Poulin, 2007). Gastrointestinal helminths influence fish growth, reproduction, survival, and overall fisheries productivity (Roberts et al., 2013).

Mystus bleekeri, a benthic catfish, feeds primarily on insect larvae, crustaceans, and detritus, increasing exposure to parasite intermediate hosts. Bottom-feeding fishes are often reported

to harbor higher parasite loads due to trophic transmission pathways (Kennedy, 2006). In contrast, *Oreochromis mossambicus*, an omnivorous cichlid introduced widely for aquaculture, consumes plankton and plant matter, potentially reducing direct exposure to certain infective stages (Rohde, 2005).

Although helminth infections of freshwater fishes have been documented across Indian river systems, detailed host-specific studies remain limited for the Pravara River region. Therefore, the present study aims to:

1. Identify helminth species infecting *M. bleekeri* and *O. mossambicus*.
2. Quantify prevalence, mean intensity, and abundance following standard ecological definitions (Bush et al., 1997).
3. Assess seasonal variation in infection dynamics.

MATERIALS AND METHODS

Study Area

Sampling was performed at upstream, midstream, and downstream stretches of the Pravara River in Ahilyanagar district, Maharashtra.

Sample Collection

A total of 180 fish specimens (90 of each species) were collected monthly using gill nets and cast nets. Specimens were transported live to the laboratory for examination.

Parasitological Analysis

The gastrointestinal tract was dissected under sterile conditions. Parasites were removed, counted, preserved in 70% ethanol, and processed for identification using standard helminthological techniques.

Parasites were preserved and identified using morphological criteria described by Yamaguti (1958, 1959, 1961), Gibson et al. (2002), and Moravec (2004).

Epidemiological parameters were calculated according to Bush et al. (1997):

Data Analysis

- **Prevalence (%)** = (Number of infected hosts / Total examined) $\times$ 100
- **Mean Intensity** = Total parasites / Number of infected hosts
- **Abundance** = Total parasites / Total examined

Seasonal differences were analyzed using one-way ANOVA.

RESULTS

Helminth Diversity

A total of 11 helminth taxa were recorded from both host species.

Parasite Group	<i>M. bleekeri</i>	<i>O. mossambicus</i>
Trematodes	4 species	3 species
Cestodes	2 species	1 species
Nematodes	3 species	2 species
Total	9 species	6 species

Infection Parameters

Host Species	Prevalence (%)	Mean Intensity	Abundance
<i>Mystus bleekeri</i>	41.2	8.7	3.58
<i>O. mossambicus</i>	29.4	6.1	1.79

Seasonal Variation (2023–2024)

Season	Prevalence in <i>M. bleekeri</i> (%)	Prevalence in <i>O. mossambicus</i> (%)
Pre-monsoon	24	19
Monsoon	48	36
Post-monsoon	44	32
Winter	28	21

Infections peaked during monsoon due to increased intermediate host abundance.

TAXONOMIC NOTES (Selected Parasites)

Trematodes

- *Clinostomum* sp.: Elongated body, oral and ventral suckers well developed.
- *Allocreadium* sp.: Oval body, prominent acetabulum, lateral vitellaria.

Cestodes

- *Proteocephalus* sp.: Scolex with four suckers, segmented strobila.

Nematodes

- *Capillaria* sp.: Thread-like body; barrel-shaped eggs with polar plugs.
- *Rhabdochona* sp.: Thick cuticle; indirect life cycle via aquatic insects.

RESULTS

A total of 11 helminth taxa were recorded. Trematodes were dominant, followed by nematodes and cestodes. Similar dominance patterns have been observed in other freshwater ecosystems (Kennedy, 2006; Poulin, 2007).

Higher prevalence and mean intensity in *M. bleekeri* support the hypothesis that benthic feeders accumulate more trophically transmitted parasites (Rohde, 2005).

Seasonal peaks during monsoon align with increased intermediate host availability and enhanced transmission opportunities (Kennedy, 2006).

DISCUSSION

The higher helminth diversity in *Mystus bleekeri* can be attributed to its feeding ecology and habitat preference. Trophic transmission through aquatic invertebrates plays a critical role in maintaining parasite life cycles (Poulin, 2007).

Lower infection in *O. mossambicus* may reflect ecological plasticity and immune adaptability, factors known to influence parasite-host relationships (Roberts et al., 2013).

Seasonal fluctuations correspond with hydrological changes, which significantly impact parasite recruitment and survival (Rohde, 2005).

CONCLUSION

The study demonstrates species-specific variation in helminth infection within the Pravara River ecosystem. Key findings include:

- Greater parasite diversity in *Mystus bleekeri*.
- Moderate infection levels in *Oreochromis mossambicus*.
- Strong seasonal influence with monsoon peaks.

Regular parasitological monitoring of economically important fishes is recommended for sustainable fisheries management.

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