

# TREMATODE PARASITES AND ITS INFLUENCE ON FORAGING BEHAVIOR OF *Loricariichthys platymetopon* (PISCES, SILURIFORMES)

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## Introduction

Parasites and hosts struggle against each other over the evolutionary time using a series of spectacular adaptations. In order to achieve greater success in transmitting from one host to another, some parasites can manipulate their hosts in several ways. Trophically transmitted parasites often make intermediate hosts more susceptible to predation by the target host, increasing the probability of life completion. So, parasites that manipulate intermediate hosts adaptively increase their fitness at the cost of hosts' fitness. Here we experimentally investigated the influence of a generalist fish parasite *Clinostomum* sp. on the foraging behavior of fish hosts, and we used the freshwater fish *Loricariichthys platymetopon* as a host model to understand some ecological and evolutionary aspects of such the interaction. We hypothesized that hosts with higher parasitic intensities exhibit deficient foraging behavior when compared with hosts with low intensities.

## Aim

Experimentally investigate the influence of trematodes of the genre *Clinostomum* sp. on foraging behavior of *L. platymetopon*.

## Materials and Methods

The experiment was performed in 200l recirculating mesocosms, which was filled 30 days prior to the trials to allow periphyton (used as food resource by the fish) to grow. Fish were sampled from the Upper Paraná River Floodplain, in Paraná State about 150 Km upstream Itaipu Reservoir. Two individuals of *L. platymetopon* were placed in each arena, being one with high intensity (more than 44 parasites per host) and other with low intensity (less than 18 parasites per host) of parasites. The full experiment was replicated 10 times and all trials were video recorded between 7 and 8 in the morning (time when this species is highly active). The outcome variable was the distance covered by hosts to forage during one hour. We used the Wilcoxon test to evaluate differences between foraging distances covered by fish.

## Results and Discussion

Our results suggest that the intensities of parasites are inversely proportional to the distance covered to forage. The Wilcoxon test suggests significant differences between the distances covered by hosts, so that hosts with low parasite intensities moved on average 11.5m while hosts with the high intensities moved on average 2,18 m ( $P = 0.02$ ). *Clinostomum* metacercariae encysted in the fins of *L. platymetopon* may lead to a degeneration of the muscle fibers and destruction of the cells, consequently, impairing their movements (Eiras *et al.*, 1999). If we take into account that the observed results were evaluated at a time of intense foraging of birds, which are the hosts of such parasite, it is probable that these behavioral modifications are not random, and the consequences may be profitable to the parasite, because in fact hosts with a high number of parasites tend to be more exposed to predation. Therefore it is reasonable to suggest that the parasites evolved to manipulate the behavior of intermediate hosts (Lafferty, 1999).

## Conclusion

This study suggests that parasitized fish have foraging activity negatively affected. Because this experiment is performed in an artificial environment, perhaps observations in natural environments could decrease host stress and provide more extended results. The study supports hypotheses and theories tested by previous studies and indicates a new parasite as a manipulating agent and a new host. However, new studies should be proposed to clarify doubts about the nature of the manipulation.

## References

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## Aknowledgements

We are grateful to CAPES and CNPq, agencies who funded this study or provided scholarships.