

Supervision :

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Funding for student:

X yes to be discussed no

Title of the research project :

Parasite-induced altered anti-predator behaviour and increased vulnerability to predation by final hosts: a causal study.

Key words :

Parasitic manipulation – antipredatory defence – microcosm experiment -

Brief description :

Multidimensionality in host manipulation by parasites is now widely acknowledged, in particular in parasites with complex life cycle and trophic transmission (1). Although both field and microcosm experiments have shown increased vulnerability to predation of infected intermediate hosts, none have so far established the relative contribution of each behavioral dimensions altered by infection (2). Host antipredatory behaviors are an obvious limit to the transmission of parasites with trophic transmission. Previous observations in microcosms suggest that the alteration of sheltering behavior of *Gammarus pulex* by the acanthocephalan *Pomphorhynchus sp.* contributes to the increased vulnerability of infected preys to familiar as well as unfamiliar fish (1). However, this observation still awaits a formal demonstration.

This research project aims at addressing this topic by answering three questions, using original design of microcosm experiments (1) to what extent sheltering behavior decreases vulnerability to fish predation in uninfected *G. pulex* ?, (2) does the differential use of refuge between *P. tereticollis* -infected *G. pulex* and uninfected ones translate into increased predation rate upon infected preys? If appropriate, an ethopharmacological approach will be used to investigate further the mechanisms lying behind sheltering behavior and its alteration by *P. tereticollis*.

Literature (2 references):

Cézilly, F., Favrat, A., Perrot-Minnot, M.-J. 2013. Multidimensionality in parasite-induced phenotypic alterations: ultimate versus proximate aspects. *J. Exp. Biol.* 216, 27-35.

Perrot-Minnot, M.-J., Maddaleno, M., Balourdet, A. & Cézilly, F. 2012. Host manipulation revisited: no evidence for a causal link between altered photophobia and increased trophic transmission of amphipods infected with acanthocephalans. *Functional Ecology*, 26, 1007–1014.

Technical aspects of the research project:

Collecting samples in the field, conducting experiments in microcosms, dissection, phenotypic engineering

Essential skills and abilities desired:

Interest in evolutionary parasitology and behavioural ecology; ability to work on its own; skill in the use of hands, adroitness.