Behavioral changes caused by *Toxoplasma gondii* have been extensively studied in laboratory rodents, but little is known about the importance of the famous 'fatal attraction' in the wild. This parasite is not only known for its alteration of host brain functions but, consequently, may also influence predator-prey dynamics. Understanding its role in nature is critical, as this parasite infects around a third of the human population worldwide and is widely transmitted by predation in most warm-blooded animal species, including farm animals and species of conservation concern.

T. gondii is a protozoan with indirect life cycle involving two distinct hosts: definitive feline hosts, where sexual reproduction occurs, and intermediate hosts, encompassing a diverse range of warm-blooded vertebrates. In intermediate hosts, the parasite multiplies asexually, forming tissue cysts in many organs, including the brain. It is predicted by adaptive behavioral manipulation hypothesis and demonstrated for many taxa of parasites with complex life cycles, that intermediate hosts are most likely to become part of parasite's extended phenotype and be behaviorally manipulated. Host behavioral manipulation, however, is not just any change in the host's behavior in reaction to infestation, but rather a specific behavioral alteration that increases the parasite's fitness. Such alteration can improve the parasite's survival, transmission rates, or reproductive success. For *T. gondii,* it should be the most beneficial that intermediate hosts (such as rodents) are more frequently predated by the final feline host (which would facilitate sexual reproduction), than other predator groups. However, *T.gondii* is also widely spread in many species of intermediate hosts, and to improve the transmission rates, it is more advantageous for it to be predated (or scavenged on) by any warm-blooded animal that will allow it to proliferate in the tissues, than not be predated at all. The importance of sexual reproduction and different transmission routes in *T.gondii* natural cycles are not well known, and our project is meant to shed light on this topic.

Only snapshots of *T. gondii* across different ecosystems and wild taxa have been offered in scientific literature, and we lack a comprehensive understanding of its wild cycle. Researchers have tried to correlate infection status with specific cognitive or behavioral traits, but the scope and mechanism of action of the parasite in the wild context are largely understudied. In recent years, several projects investigating behavioral changes in wild populations have been conducted, with some of them getting a lot of media attention. According to these studies, wolves are significantly more likely to become pack leaders if they are infected by the parasite; *Toxoplasma*-positive spotted hyenas (*Crocuta crocuta*) are killed more often by lions (*Panthera leo);* chimpanzees (*Pan troglodytes troglodytes*) lose their aversion to leopard urine (*Panthera pardus); T.gondii*-positive red deer (*Cervus elaphus*) are killed by hunters sooner than their healthy conspecifics. However, there is a lack of ecological studies that would provide us with solid sample size and experimental, rather than just correlational evidence to support these claims, thus we still do not know to what extent such behavioral alterations occur among wild animals and if they have any relevant ecological consequences.

This project aims to assess if parasite manipulation favors sexual reproduction, or transmission and possible consequences: does *T. gondii* affect all predator-prey interactions within ecosystems, or just the ones involving felines? Are parasitized intermediate hosts generally bolder, potentially affecting a wide variety of ecological processes, or is boldness limited to interactions with their predators only?

Firstly, we will investigate how the parasite alters interactions of the common vole (*Microtus arvalis*) with its feline and non-feline predators. For this purpose, we will use free-living cats (*Felis domesticus*) and domestic ferret (*Mustela furo*) in predator cue experiments in the outdoor enclosures where we will expose the rodents to predator olfactory cues. Secondly, we will compare the movement of infected and non-infected voles using radiotelemetry in their natural habitat. Thirdly, we will investigate the predation rates: we will collect cat-predated prey from their owners, and rodents killed by two species of shrikes: the greater grey shrike (*Lanius excubitor*) and the red-backed shrike (*Lanius collurio*), that with their exceptional caching behavior of hunted prey in the form of larders (paling the prey on thorns or sharp branches) are a perfect predators for this project. Thanks to an array of interdisciplinary methods, we will provide a clearer understanding of *Toxoplasma*'s manipulative reach in the wild and its effect on predator-prey interactions.