Internship proposition: Competitive interactions and thermal optima between a native European spider, *Eratigena atrica* (C. L. Koch, 1843), and the range-expanding spider *Zoropsis spinimana* (Dufour, 1820).

Context: Geographic ranges of species are intrinsically dynamic, contracting and expanding at large temporal and spatial scales with environmental changes. However, over the last few decades, ecologists have been reporting numerous examples of species whose range has been expanding at unusual rates, often ascribed to anthropogenic factors. Among those species, the Mediterranean Spiny False Wolf Spider *Zoropsis spinimana* (Dufour, 1820), a spider originating from the Mediterranean, have been considerably expanding its range to the point of being now occurring all over Northern and Eastern Europe. In its original range, *Z. spinimana* has been observed in forested and semi-open habitats, while it seems to occur in more anthropogenic areas as it moves northwards, e.g. houses and surroundings. This change of preferred environment leads to the potential use of habitats already occupied by local species, such as a domestic species of similar size, the Giant House Spider *Eratigena atrica* (C. L. Koch, 1843). Yet, despite a noticeable expansion at the scale of Europe, the biology, the ecology and the consequences of this phenomenon remain poorly documented (cf. PhD thesis of Nathan Viel, supervised by Prof. Julien Pétillon and Prof. Stano Pekár). In order to better understand the sudden expansion of *Z. spinimana*, specifically its influence on the native fauna, it appears necessary to determine whether this phenomenon results in competitive interactions. For this purpose, a fieldwork campaign has been conducted to collect adult individuals, currently maintained in the laboratory. A new, standardized generation has been obtained by mating. In addition, encounter experiments (recorded on camera) have been carried out to test for a potential direct competition throughout predation, and the possibility of indirect competition remains to be tested. Here, it is proposed to investigate the thermal ecological valences of the two species, in order to determine if *Z. spinimana*, supposedly associated with xero-thermophilous conditions, show a certain plasticity allowing it to use similar micro-habitats than *E. atrica*, in terms of temperature (i.e. partial overlapping of ecological niches).

Student task: First, the student will have to review and analyse the videos of the encounter experiments (already acquired) by building ethograms, in order to better understand the direct interactions between the studied species. Secondly, the student will have to monitor different juvenile stages by measuring the survival rate of individuals at different temperature conditions in order to determine the optimal thermal range of each species. Finally, the student will have the task to analyze the acquired data.

Period: Spring 2024, March-June (recommended period: 2 months).

Location: This internship will take place at the Department of Botany and Zoology of Masaryk University in Brno, Czech Republic, in collaboration with the research laboratory ECOBIO of the University of Rennes, France.

Profile sought: 3rd year Bachelor student, 1st year Master student.

Supervision: Nathan Viel (University of Rennes, FR. Masaryk University, CZ)

Application: If you would like to apply, send a CV and a cover letter at nathan.viel@univ-rennes.fr before march 16th, 2024.