MASTERS PROJECT:
Methods for biodiversity assessment of insect communities

Biodiversity is being lost at a fast pace, with many species going extinct before being described and catalogued. This is especially true for insects, one of the most diverse group of species on Earth.

We are looking for a highly motivated master student interested in developing molecular tools and methodologies to describe, quantify and monitor insect communities. More specifically, the student will compare the usefulness and efficiency of the most recent methods for biodiversity assessment developed so far: Metabarcoding and Mitochondrial MetaGenomics (MMG).

How will it be done: The student will sample insect communities from different habitats in June and July. The samples collected will then be processed in the lab using different protocols for DNA extraction (destructive and non-destructive methods) and DNA enrichment (PCR-based and PCR-free methods) before high-throughput sequencing. The different protocols will be compared in terms of their efficiency in identifying species composition of sampled communities (presence data) and in quantifying the number of individuals present (abundance data).

The project involves:

- Fieldwork to sample insects
- Molecular lab work
- Analysing sequence data (bioinformatic analyses, PCR primers design)
- Analysing community composition data (biodiversity analyses) (community composition, species diversity and species abundance)
- Writing report (MSc)

The student will learn:

- Insect collection methodologies
- Experimental design
- Molecular lab methods
- Bioinformatic analyses of sequence data
- Biodiversity analyses of insect communities
- Manuscript writing for publication in a scientific journal

The project will be contributing to the *Insect Biome Atlas Project*, a large 5-year study that aims to characterize the entire insect community fauna from Sweden and Madagascar, founded by the Wallenberg Foundation.

For more information, contact Prof. Fredrik Ronquist (fredrik.ronquist@nrm.se) and Daniel Marquina (daniel.marquina@nrm.se)

https://ronquistlab.github.io
https://metagusano.github.io/metabarcoding_project.html