



MSc Project

Unraveling the effects of local and landscape factors on arthropod communities on green roofs using environmental DNA metabarcoding.

We are looking for an enthusiastic MSc student to work on eDNA metabarcoding and urban ecology. The project involves molecular biology work (DNA extraction and PCRs for the construction of a sequencing library) and statistical analyses of diversity patterns. The project will take place Eawag (Dübendorf) and is part of a larger research program based at Eawag and WSL (www.eawag.ch/bgb).

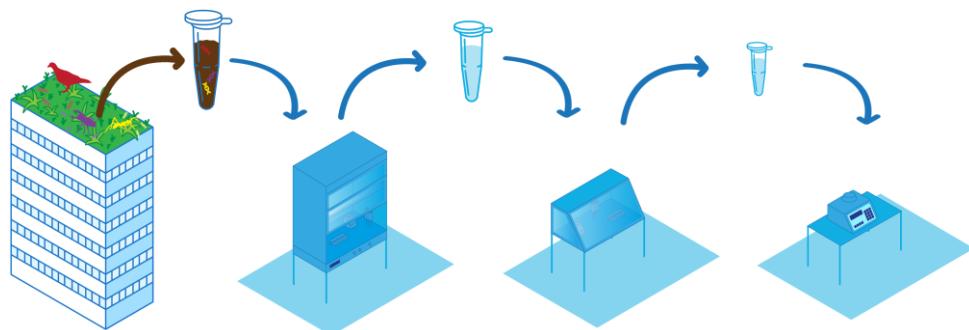
Background

Urbanization is known to be a major cause of biodiversity loss, primarily through the destruction and fragmentation of habitats. To mitigate these effects, green roofs have been proposed as a potential solution for compensating for ground habitat loss, while also improving the connectivity of the urban landscape. However, there is limited evidence on their effectiveness at the landscape scale, thus raising concerns regarding the use of green roofs as a surrogate for ground habitats.

In recent years, environmental DNA (eDNA), which refers to genetic materials that can be extracted from environmental samples (e.g., soil, water), has emerged as a promising tool for studying biodiversity, especially in urban environments. In this study, we aim to use eDNA to assess the diversity and distribution of arthropods on green roofs and explore their response to local (e.g., building height) and landscape (e.g., distance from the forest) variables.

Aim

In this MSc project, you would work on soil eDNA samples already collected from green roofs in the city of Zürich. You would perform all steps of the metabarcoding library preparation, from DNA extraction to sequencing. Once the sequences acquired, you would process the data using dedicated bioinformatics pipelines, and identify the species present in the samples. You would then identify local and landscape variables that shape arthropod communities in green roofs.



Requirements

Interest in environmental DNA and urban ecology, interest in developing your skills in the molecular lab and in the analysis of diversity patterns. Ideally, some experience in molecular laboratory methods (PCR, Sequencing, etc.).

Ideally, the MSc project would start in September 2023.

Contact/Supervision

Prof. Dr. Florian Altermatt (florian.altermatt@ieu.uzh.ch), University of Zurich and Eawag Dübendorf, as well as Dr. Marco Moretti and Dr. Lauren Cook (BGB initiative)

Kilian Perrelet (kilian.perrelet@eawag.ch), Eawag Dübendorf and day-to-day supervisor

More info: <https://www.eawag.ch/en/department/sww/projects/benefit/>

We are looking forward to meeting you!