

MSc project

Unraveling community structure of aquatic insects in a river catchment

We are looking for an enthusiastic MSc student who will be working on the assessment of the community structure of aquatic insects in a river catchment. The project involves extensive species identification tasks and is part of a larger research program (led by Dr. Luca Carraro at UZH/Eawag).

Background

Aquatic insects belonging to the orders Ephemeroptera, Plecoptera and Trichoptera have been collected via kicknet sampling at several locations and different time points across the Necker catchment (Cantons St. Gallen & Appenzell Ausserrhoden), as part of a research study aimed to evaluate the suitability of environmental DNA-based biodiversity assessments. The combined use of eDNA and kicknet data will allow predictions of biodiversity patterns in space and time at high resolution.

Aim

A relevant part of the MSc project will consist in supporting the activity of species identification from the samples collected in the Necker. Subsequently, these data will be used to analyze several aspects of the community structure of aquatic insects (such as species distribution, co-occurrence patterns) and to produce a metacommunity model at catchment scale. Comparative analysis of kicknet and eDNA data is a possibility.

Requirements

Interest in community ecology, aquatic insect identification skills, good command of R, interest in species distribution modelling.

Starting date

Any time.

Contact/Supervision

Prof. Dr. Florian Altermatt (florian.altermatt@ieu.uzh.ch), University of Zürich and Eawag Dübendorf

Dr. Luca Carraro (luca.carraro@eawag.ch, day-to-day supervisor - data analysis)

Remo Wüthrich (day-to-day supervisor - species identification)

References

- Carraro, L., Mächler, E., Wüthrich, R., & Altermatt, F. (2020). Environmental DNA allows upscaling spatial patterns of biodiversity in freshwater ecosystems. *Nature communications*, 11(1), 1-12. <https://doi.org/10.1038/s41467-020-17337-8>
- Mächler, E., Little, C. J., Wüthrich, R., Alther, R., Fronhofer, E. A., Gounand, I., ..., Altermatt, F. (2019). Assessing different components of diversity across a river network using eDNA. *Environmental DNA*, 1(3), 290-301. <https://doi.org/10.1002/edn3.33>