



UPPSALA
UNIVERSITET

Master project on plant-mediated methane emissions in littoral zones of lakes

Here is an opportunity to do a master thesis on plant-mediated methane emissions in littoral zones of lakes. This includes a 1-week fieldwork in Jämtland during June/July.

Department: Department of Ecology and Genetics, Uppsala University (limnology unit)

Place: EBC, Uppsala

Start: Spring 2023 or later

Application: charlotte.grasset@ebc.uu.se

Background

Lakes are affected by climate change that can trigger a dangerous feedback loop by increasing the amount of greenhouse gases (i.e. carbon dioxide (CO₂) and methane (CH₄)) released by lakes. In this research project, we aim to specifically understand how greenhouse gas emissions are driven in littoral zones of lakes, which are hotspots for lake CH₄ emissions.

Project aims and description

In this project, the student will **determine how CH₄ emissions differ among aquatic plants due to differences in CH₄ transport and oxidation**. This will be done using gas flux measurements and the stable isotope composition of CH₄ ($\delta^{13}\text{C-CH}_4$ and $\delta^2\text{H-CH}_4$) in samples taken from the field. In addition, plant traits (root length, surface of the leaf, etc.) will be measured to see how they relate to the efficiency of the plant in transporting or oxidizing CH₄. Several lakes will be sampled in Jämtland in the Ånnsjö region (1-week fieldwork in June or July) and in Uppland (July or August) to collect gas samples from various plant species.

Qualifications

Interest in biogeochemistry and in particular in greenhouse gas fluxes. Interest in working in the field. The project will involve spending time on a small boat close to the shore of lakes. The candidate should be able to conduct independent work (with appropriate support). A driving license is necessary.