



WSL Institute for Snow
and Avalanche Research SLF

Masterthesis: Effects of novel enemies on alpine plants



The WSL Institute for Snow and Avalanche Research SLF is part of the Swiss Federal Institute for Forest, Snow and Landscape Research WSL and thus of the ETH Domain. WSL focuses on the sustainable use and protection of the environment and on the handling of natural hazards. WSL employs approximately 600 people, of whom 140 work at SLF in Davos.

The Group Mountain Ecosystems within the Research Unit Alpine Environments and Natural Hazards investigates how climate change and land use affects the diversity and functioning of alpine ecosystems and is offering a masterthesis about the effects of novel enemies on alpine plants.

Background

Climate change might lead to novel biotic interactions, such as the ones between plants and herbivores or pathogens. Such novel interactions could profoundly influence how species and communities respond to changing conditions (Wisiz et al. 2013, HilleRisLambers et al. 2013, Alexander et al. 2015, 2016). Novel interactions occur if species shift their ranges at different rates following climate change (Gilman et al. 2010). However, the impact that novel plant-enemy interactions will have on species' responses to climate change is currently unknown.

Project

In this Masterproject you will establish a multi-species transplant experiment within an existing insect, fungal pathogen and mollusc exclusion experiment along an elevational gradient in the region of Davos. Focal alpine plants will be exposed to either their current or future enemies, under climates ranging from conditions experienced today to those that are predicted to occur in the Alps over the next 100 years. Together with a PhD student you will test whether species traits can be used to predict how species response to novel enemies and warming.

The experimental sites are at 2600m, 2000m and 1600m elevation, and accessible either by car or cable car. In a small team you will perform the transplant experiment, help in maintaining the exclusion experiments and measure the response of the transplanted species to current and novel enemies at the end of the growing season.

We are looking for a highly motivated student interested in plant-consumer (insect herbivores, pathogens) interactions and willing to do fieldwork. You should be a team player and have ideally some experience in data analysis using R. The master project takes place in Davos at the SLF (part of the WSL) and we help in finding housing in Davos (housing costs will be mostly covered by the SLF). We offer an inclusive environment in an enthusiastic and small ecological team, in a stunning alpine environment. If you are interested, please send a motivation statement to anne.kempel@slf.ch

Supervision

Main supervisor: Anne Kempel (SLF)

Additional supervision: You will work in close collaboration with Julien Bota (julien.bota@slf.ch), Phd student in the project. The project is further advised by Jake Alexander ETH (jake.alexander@usys.ethz.ch) and Eric Allan (eric.allan@unibe.ch), Uni Bern.

Major

Ecology and Evolution, Umwelt und Naturwissenschaften

Group work

It is possible to have two Masterprojects on this project, and to apply as a team. Also, reach out if you are interested in additional topics within this project (e.g., slugs and traits along elevational gradients, effects of aboveground consumer removal on belowground organisms).

Start

Ideally around May/June 2024 but this can be negotiated.

More information about the BugNet project: www.bug-net.org



WSL-Institut für Schnee- und Lawinenforschung SLF

Flüelastrasse 11, CH-7260 Davos Dorf, Telefon +41-81-417 01 11, Fax +41-81-417 01 10, www.slf.ch