

Succession of microbes associated with below and above ground plant parts in a glacier fore field



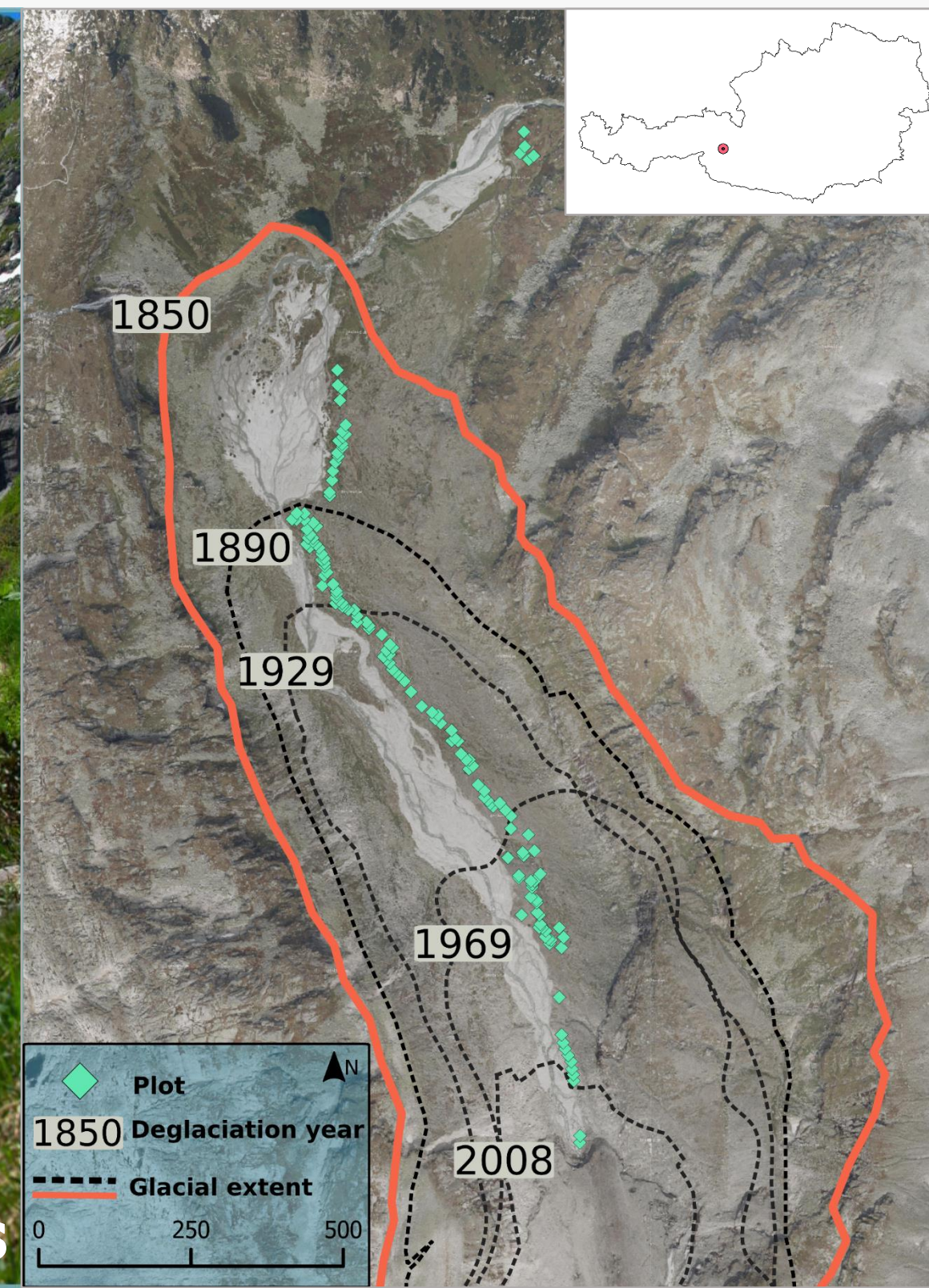
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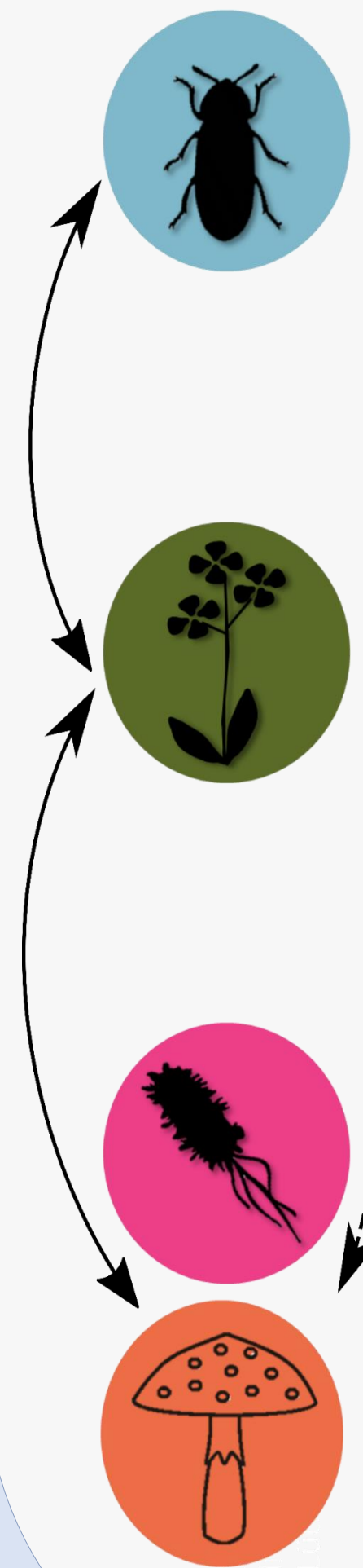
Research area



- Central Eastern Alps, Hohe Tauern National Park Stubachtal, Salzburg
- Altitude: 2068m - 2150m a.s.l
- Glacial loss: 1.7 km since 1850
- 135 Plots ~ one plot per 1.25 years of succession
- 5 Plots hosting climax communities

Objectives

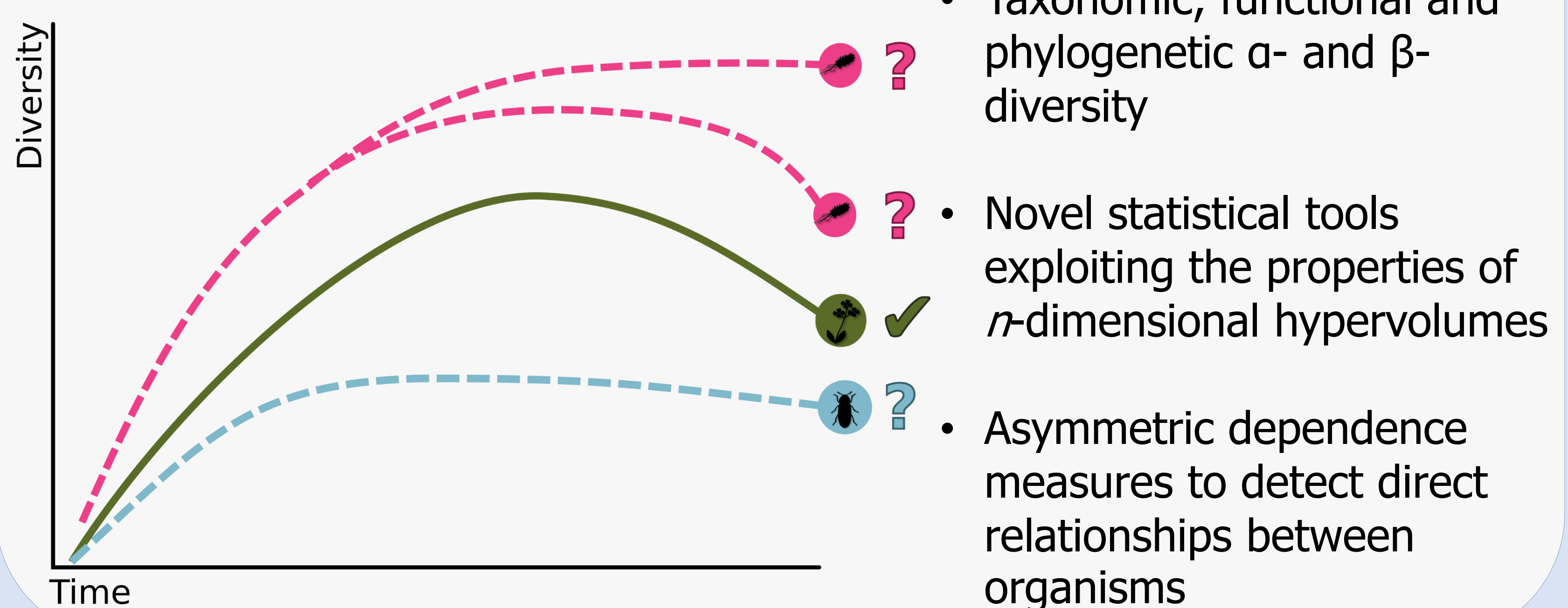
- Glacier forefields provide an excellent opportunity to study several decades of microbial succession over the distance of only a few hundred meters. Colonizable substrate age is well documented (time since deglaciation) and can be correlated to the diversity of microorganisms.
- We will combine fieldwork and laboratory experiments to gain novel insights into the interdependencies of microorganisms with other taxonomic groups, such as plants and arthropods.
- These findings will be essential for future conservation and restoration efforts of natural and anthropogenic altered ecosystems.



Data generation

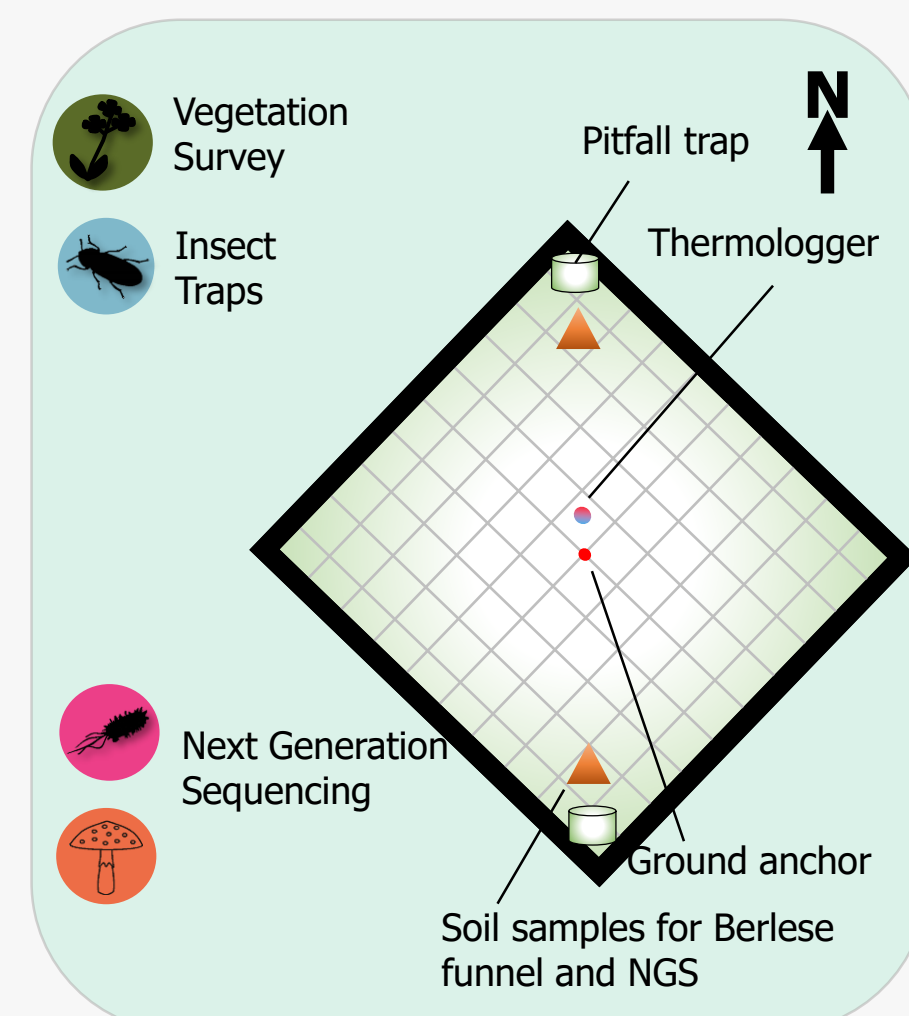


Data analysis & Hypotheses

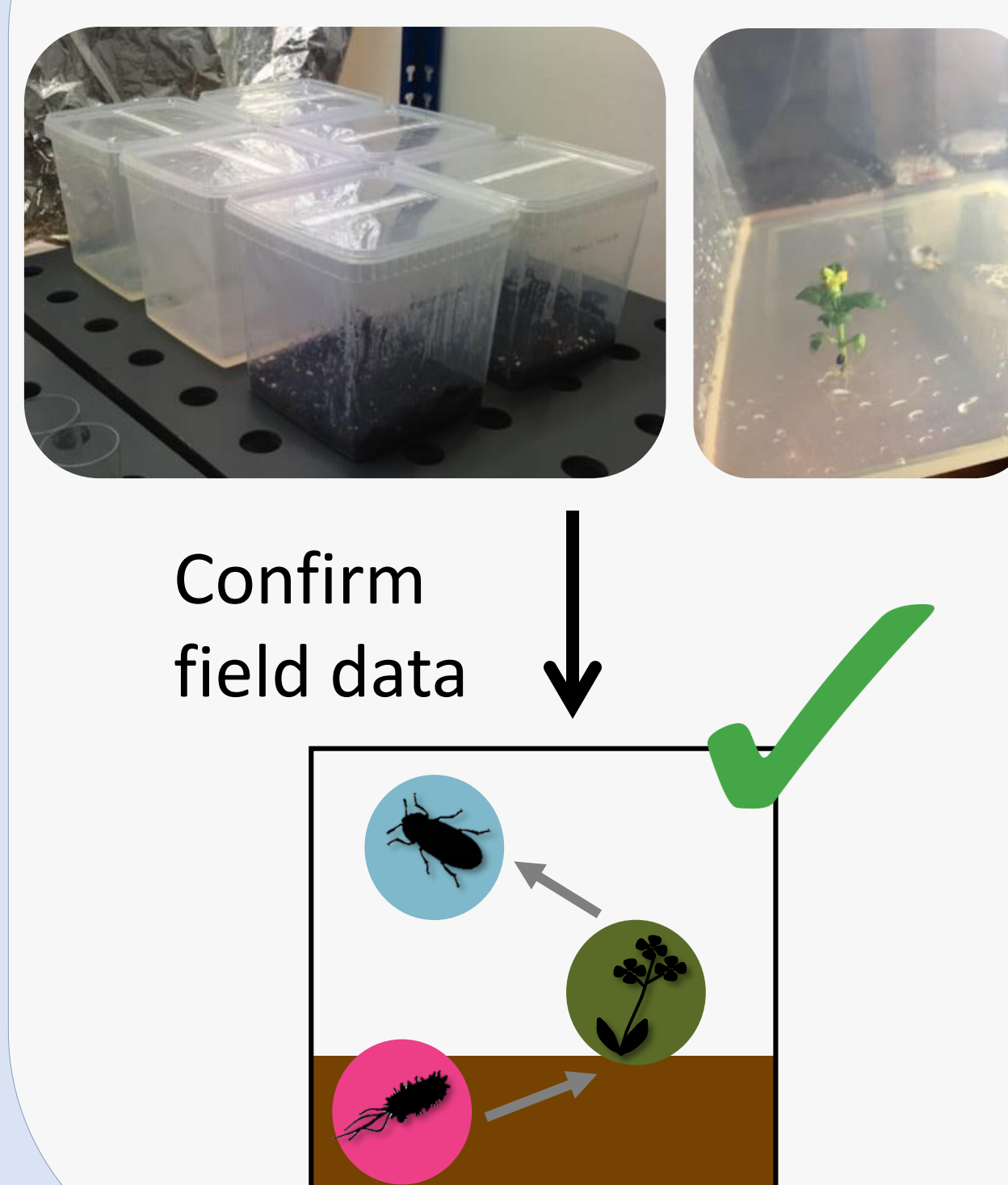


Methods

- Vegetation survey
- Arthropod sampling with Pitfall traps and Berlese funnels
- Sequencing: NGS for microbiome, Sanger to identify cultivar strains
- 16S rRNA for Bacteria
ITS for Fungi
- Detection of ecologically important inter-specific relationships with new statistical methods
- Microcosm experiments under controlled conditions to confirm hypotheses postulated from field data



Microcosm

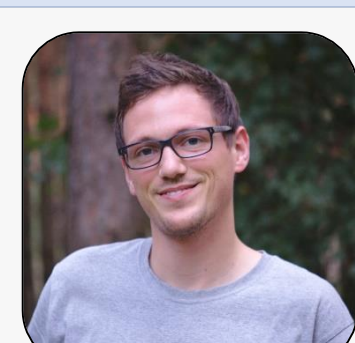


Data validation

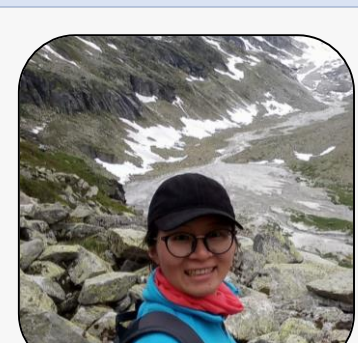
- Hypotheses on ecological relationships derived from field-data will be tested under controlled laboratory conditions
- Selected plant species will be grown in sterile containers.
- Plants will be inoculated with defined bacterial or fungal strains
- Allows to test for direct- and indirect effects of microorganisms on plants and animals



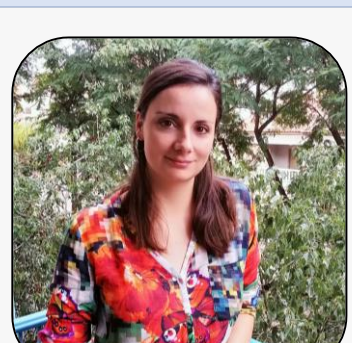
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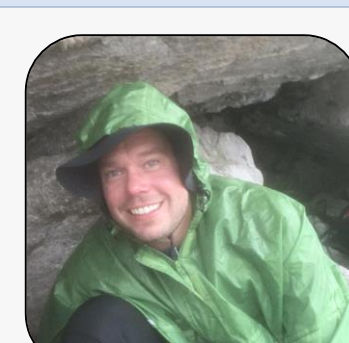
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