

MSc Project Opportunity

How does drought memory in trees shape multi-trophic interactions?

Background: Extreme droughts can have long-lasting effects on forest community dynamics and species interactions. From the top-down, predators (i.e. insectivorous birds) play an important role in benefiting plants by controlling herbivore populations. However, how predators may be directly and indirectly impacted by prior drought exposure within these interactions is not yet well understood, which has implications for arthropod community structure and plant defense. The aim of this project is to understand if prior drought exposure modulates multi-trophic interactions and disentangle the mechanisms by which this may occur.



The Project: The MSc student has the opportunity to make use of a large drought stress experiment near Munich to explore these multi-trophic interactions. You would conduct predator foraging assays using clay caterpillars (pictured) in European beech trees that have previously been experimentally drought stressed with trees that have not been exposed to drought. You could conduct further experiments on the top-down (predator e.g. birds) and bottom-up (drought/plant) mechanisms of this interaction through laboratory and greenhouse experiments (e.g. bird exclusions, predator assays, herbivore assays, plant leaf analysis). The study will be conducted in late spring 2027. Also, you should not be afraid of heights as you may be working in a canopy crane. Basic skills in statistics with R are advantageous.

Project start: Early 2027

Project duration: 6 month-1 year

Contact michael.eisenring@wsl.ch

