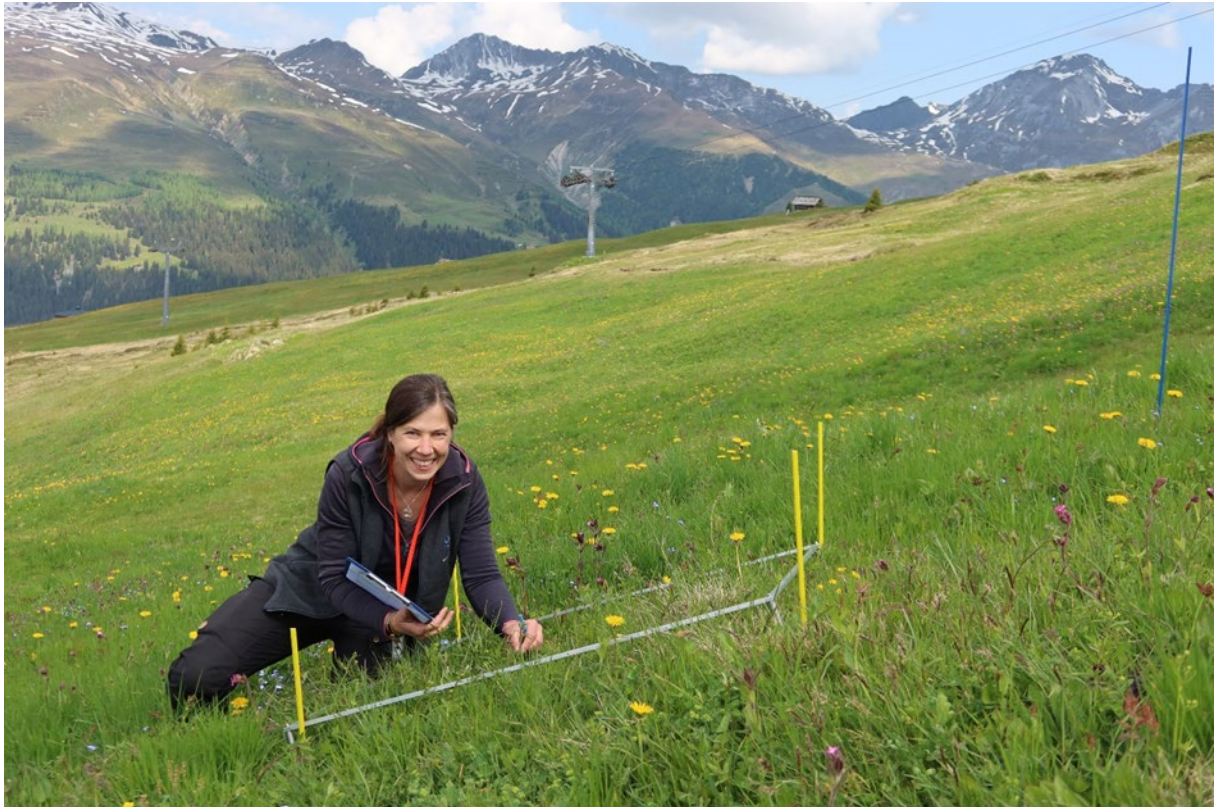


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Research in Graubünden

Hoovering the mountain meadows

Biodiversity at Jakobshorn - plants and their enemies



Anne Kempel identifies and counts plants above the Clavadeleralp. Photo: Jochen Bettzieche/SLF

Anne Kempel picks a clover leaf and points to small holes: “Here, that was an insect.” Immediately afterwards, she holds another leaf in her hand, rust-brown in color: “And here, a rust fungus, isn’t it pretty?” The biologist from the Mountain Ecosystems research group at the SLF is also fascinated by the tunnels of fly larvae in leaves.

She is sitting in a flower meadow above the Clavadeleralp on the slopes of the Jakobshorn. She hardly has time for the magnificent mountain panorama. Instead, she bends over a metal frame with a magnifying glass in her hand and identifies flowers and grasses. She has marked out her experimental field with blue and yellow sticks in the municipal colors. The topic of biodiversity is currently on many people’s minds. It is particularly pronounced here. “We want to understand how this meadow works and how it will change with climate change,” says the biologist.

If there were only plants, one species would have to prevail in the long term. But this is not the case, as a glance at her plot shows. Flowers glow in different colors, yellow buttercups, blue

gentian, light blue forget-me-nots and many more form a colorful spring mountain meadow. The fact that no one species dominates is due to its enemies: Insects, slugs and fungi. These ensure a balanced mix of plants on the slope. "So far, however, no one has investigated in detail how important these three are for biodiversity and ecosystems," says Kempel, describing the motivation for her research. Her work is embedded in the international Bug Network. Researchers are investigating the same question in 40 areas from Scandinavia to Greece, South America and New Zealand. These areas are the same everywhere, divided into 24 plots of 25 square meters each. Sometimes without insects, sometimes without slugs, sometimes without fungi, in each case combinations of these, as well as control plots where all three species are present undisturbed.

The researchers want to investigate numerous details and gain insights that are globally valid. "If we exclude all enemies, will some plant species become more prevalent and biodiversity decline?" says Kempel, citing one example. She runs three test fields in Davos, on the Jakobshorn, above the Clavadelalp and in the valley. She is also researching the effects of local temperature differences. "We also want to use special warming chambers to analyze how our mountain meadows change when temperatures rise as a result of climate change," says Kempel.

It will take at least five years before the final results are available. Until then, she will keep returning to the areas. In early summer to mow the meadow. From spring, as soon as the snow has melted, once a month to remove slugs, insects and fungi from the relevant plots and once a year for analysis. The researchers then count and identify plants and animals. Kempel explains that they use a special method to ensure that none of the animals present are overlooked: "We go over the meadow with a vacuum cleaner and use it to collect all the insects."

Author: Jochen Bettzieche / SLF

About the SLF

The WSL Institute for Snow and Avalanche Research SLF is part of the Federal Research Institute WSL and thus belongs to the ETH Domain. Its tasks are research and scientific services relating to snow, avalanches, other alpine natural hazards, permafrost and mountain ecosystems. Its best-known service is the avalanche bulletin. As part of the CERC (Climate Change, Extremes, and Natural Hazards in Alpine Regions Research Center), the SLF investigates the effects of climate change on extreme events and natural hazards. The SLF on the Internet: slf.ch

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