

# Searching the soils

William Bowman and colleagues braved beverages of pig fat and vodka in their attempt to understand the impact of long-term nitrogen deposition on Slovakian soils.

**What was the objective of the work?**

Our initial goal was to see whether the growth of alpine plants in the Western Tatra Mountains was limited by the supply of nitrogen, a common observation in temperate ecosystems. We suspected that a long history of elevated nitrogen deposition in the region may have alleviated whatever constraint this nutrient had on plant growth, and that phosphorus may have become the limiting nutrient. Secondly, we were interested in the response of the plant and insect communities to simulated nitrogen deposition. However, after we became aware of how acidic the soils were, and their unusual reaction to simulated nitrogen deposition, we focused more attention on evaluating soil responses. Finally, we also hoped to engage our Slovak colleagues in experiments addressing the impact of the environment on vegetation, insects and soil, as such experiments are relatively rare in Slovakia.



Juraj Hreško (right) and František Petrovič (left) evaluate plant growth in experimental plots in an alpine grassland near Mount Salatín in the Western Tatra Mountains. Mount Baníkov forms the skyline in the distance.

**Why did you choose this particular location for the fieldwork?**

Our project began following several visits to Slovakia as part of the International Long-Term Ecological Research (ILTER) effort. We were attracted to the work Slovak scientists were doing on vegetation change in response to nitrogen deposition. The choice of the site was made by our Slovak colleagues, who had done some initial descriptive vegetation work in the area. Our hope was that we might also be able to find historic data on vegetation composition, but unfortunately this did not pan out.

**What sorts of samples were you after?**

Our sample collection was straightforward, and included obtaining samples of water, soil and vegetation from experimental plots. This material was transported back to the



United States, and the analyses were conducted in labs at the University of Colorado.

**Did you encounter any difficulties during the fieldwork?**

One of the biggest hurdles was transporting water to the site for the treatment applications. The closest water source was a stream — only 2 km away horizontally, but 500 m vertically. For each experimental application we needed 60 kg of water. Carrying this much water required the help of some strong research assistants.

**Did you have any encounters with dangerous animals?**

Although there are still brown bears and wolves in the region, we didn't have any encounters with them. We had also hoped to see marmots, but didn't. They are endangered in the Tatras, but well-known to us from other research projects: ironically, marmots are very abundant and something of a nuisance at our research sites in Colorado, where they like to chew on field equipment.

**What was the highlight of the expedition?**

We learned a lot about the natural history and culture of Slovakia during our visits. When we weren't doing field work we enjoyed being tourists; visiting castles, caves and forests. Our hosts also introduced us to some unique beverages. Each region of the Tatras has a unique liqueur, often flavoured with native plants. After one particularly gruelling field excursion, our hut keeper made us an invigorating drink of rendered bacon fat, sugar and vodka that replenished most of the calories we had lost.

**Did the trip give you any ideas for future research projects?**

The experimental treatments at the research site are still being maintained by our Slovak colleagues. We plan to pursue some additional experiments investigating the biogeochemical impacts of sustained nitrogen deposition, and its effects on soil biota and plants.

*This is the Backstory to the work by William D. Bowman and colleagues, published on page 767 of this issue.*