Project acronym: SoilTemp

Project title: Alien species dynamics along mountain roads

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Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): Abisko Scientific Research Station (Sweden)

We will perform a resurvey of alien species distribution in plots along mountain roads in subarctic Norway, close to the INTERACT station of Abisko. Next to the assessment of native and non-native species composition, we will collect detailed microclimatic data and survey the distribution of the mycorrhizal communities to disentangle the drivers of alien species dynamics along these roads.

We aim to answer the following questions: (1) did alien species expand their ranges towards higher elevations or into the natural vegetation over the past five years and at which rate? (2) Do alien species use the present microclimatic variation as stepping stones towards higher elevations, and do roadsides play a role in alteration of the microclimate and creation of such microclimatic stepping stones? (3) Is the association with mycorrhizal fungi facilitating or hampering alien species invasions at high elevations and do roads affect the distribution and dynamics of mycorrhizal communities?

This proposal builds on the resurvey of 60 transect along 3 mountain roads reaching from the coast till above the tree line in the northern Scandes. Along these 60 transects, we assessed alien and native species composition (presence/absence, abundance and cover per species) in 2012, while soil temperatures have been monitored continuously since 2014. In summer 2017, the same transects will be resurveyed to study species dynamics in roadsides and the natural vegetation. Additionally, root samples will be collected for the analysis of the mycorrhizal abundance and community composition associated with both the native and invasive plant community.

With this monitoring project, we will gather fundamental information on the dynamics of alien species in remote cold-climate regions, where these invasions – and the human disturbances driving them – have till recently been limited.