Master's Thesis Project description

Title

Tree damage after helicopter topping

Background, study question(s)/Hypotheses (max 200 words)

By Swedish law, all powerlines above 25Kv must be secured against tree-related damage. To achieve this, electric grid companies perform tree top cuttings via a helicopter-mounted chainsaw every 8-10 years. As a consequence of these actions trees surrounding the powerlines may show significant discolorations in the tree crown. Depending on the tree species and the species of the pathogen(s) infecting the trees, damage to ecosystems, power companies, and land owners can be significant.

To specify and quantify the damage, extensive sampling and biometric measurements is required to determine:
i) The causal agent(s) of tree damage,
ii) The influence of infections on biomass production.

To achieve this, the team (master's student, postdoc, arborist) would fell, measure, and sample discs of approximately 900 trees (Birch, Spruce, Pine) along six 1.5km line transects. The species characterization would be done through culturing, standard, and new-generation genetic sequencing.

Topic available from/to

Fieldwork: aproximatley two weeks during the period between end of August to early October.
Labwork: after field material has been processed.

Supervisor(s)

Supervisor - Jonas Rönnberg (jonas.rönnberg@slu.se); Co-supervisor - Dusan Sadikovic (dusan.sadikovic@slu.se)

Special conditions/requirements

A driving license is useful to have;
Willingness to do fieldwork in the south (e.g. Småland) as well as in the north in areas around Norrland and Sundsvall.

Other information

This study will be conducted in cooperation between SLU and four largest Swedish electric power companies.

Pictures:

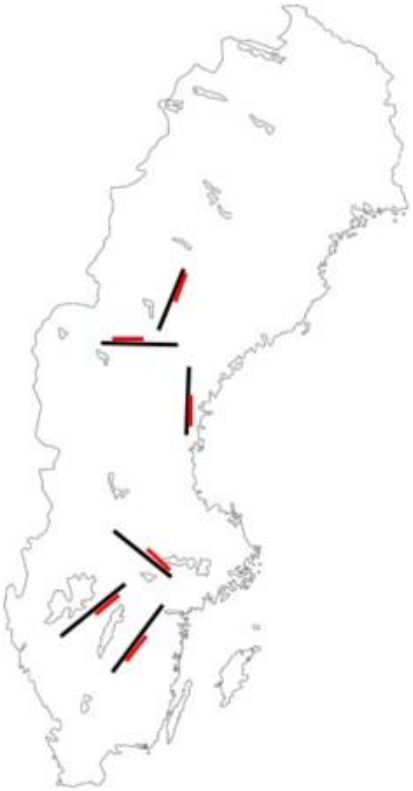

Figure 1. Possible areas of helicopter-topped conduit streets and random 3km sections (in red) for sampling and measurement of tree discoloration. The figure is not to scale and is only an illustration.