

Title: *Identification and description of synergies between biodiversity and clearings of brushwood along linear infrastructure.*

Background: Brushwood (small trees and shrubs) growing under power lines represent a threat to the power supply because they can cause power outages and damage. Brushwood growing along roadside verges and railways also represent a threat to safety and functionality, as vegetation decreases visibility, increases shading (decreasing the sun's drying and snow-melting effect) and hinders snow clearance. Current management practices of brushwood consist of regular clearings, either performed with flail/chain mowers or motor-manually with brush saws. The felled vegetation is normally left on the ground.

The recurrent clearing of vegetation creates a special habitat that to some extent resembles traditional extensively managed grasslands, and can host a high biodiversity. It has been shown that power line clearings and road verges can have similar levels of biodiversity of both plants and pollinating insects as grazed semi-natural grasslands.

Research questions: How can linear infrastructure such as power lines and roads be managed to promote biodiversity? Are there alternative management routines that, from an ecological perspective, can be better than "business as usual" practices? Can several values such as biodiversity and supply of biomass be enhanced simultaneously, while maintaining infrastructure's safety and functionality?

Aim: To identify and describe current and alternative management methods for vegetation along linear infrastructure that can potentially help to enhance biodiversity values, based on existing/on-going research and hypothesis.

Methods: The work will primarily consist of a thorough literature review of scientific articles and reports. The applicant is also expected to get in touch with practitioners at companies responsible for linear infrastructure management.

This thesis will be performed in collaboration with the on-going project "Societal and company potential, values and costs in harvest of low-value trees", led by the Forestry Research Institute of Sweden (Skogforsk). Results from this thesis are expected to be a valuable input for a system analysis in the mentioned project. The system analysis will calculate the cost of the practical, large-scale, implementation of suggested management practices, and compare to a "business-as-usual" scenario. The hypothesis is that even though alternative management practices can be more expensive, they can be justified if other values such as biodiversity are promoted.

Requisites: A good reading and writing proficiency in English is required. Proficiency in Swedish is a plus. The scope and shaping of this thesis work are expected to be adjusted together with the applicant.

Extent: 30 credits.

Main supervisor: Erik Öckinger, Department of Ecology, SLU (Erik.Ockinger@slu.se)

External supervisor at company: Raul Fernandez Lacruz, Skogforsk (raul.fernandezlacruz@skogforsk.se)

More about the project: <https://www.skogforsk.se/kunskap/projekt/varden-i-trad-som-vaxer-pa-fel-platser/>