

Forest management research in Lapland

Ville Hallikainen, senior researcher, adjunct professor

Pasi Rautio, senior researcher, adjunct professor

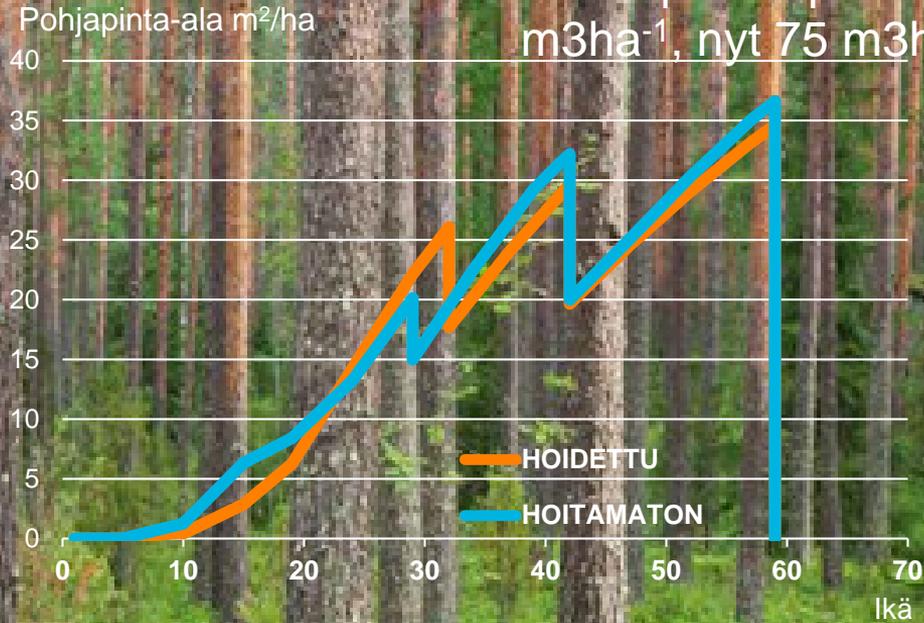




Forest management in Lapland should be diverse, as interests towards the forests of Lapland are also diverse.

How the forest of Lapland should be managed?

Runkopuu Lapissa: 1920-luvulla < 50
m³ha⁻¹, nyt 75 m³ha⁻¹



Estimations about growth of forests are important knowledge for forest owners, forest professionals and governing authorities.

How well do forests grow?
How about carbon sinks?
How forests should be thinned?



In xeric- and sub-xeric forests pine regenerates well, even without ground treatments.

Is it possible to regenerate pine naturally in Lapland?



Usually seedlings appear easily and they also grow well, as long as the forest is thin enough.

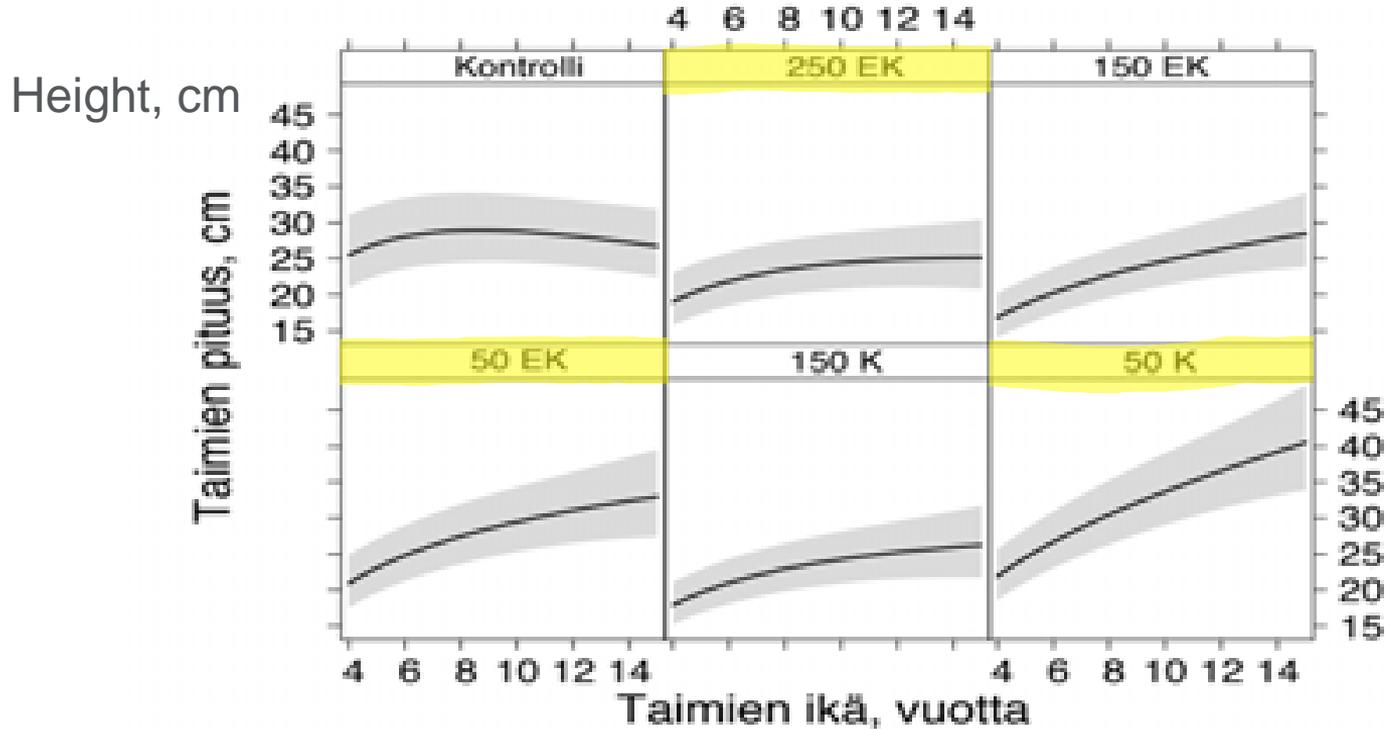
Is continuous-cover silviculture possible in pine forests of Lapland?

Could these views considered as continuous-cover forestry?



Research project:
The effect of the
number of mature
trees on seedling
establishment and
early growth

The effect of soil scarification and the number of trees on the height growth of seedlings (number of trees and EK = no scarification, K = disk trenching). Age, the number of trees and treatment included in the model.



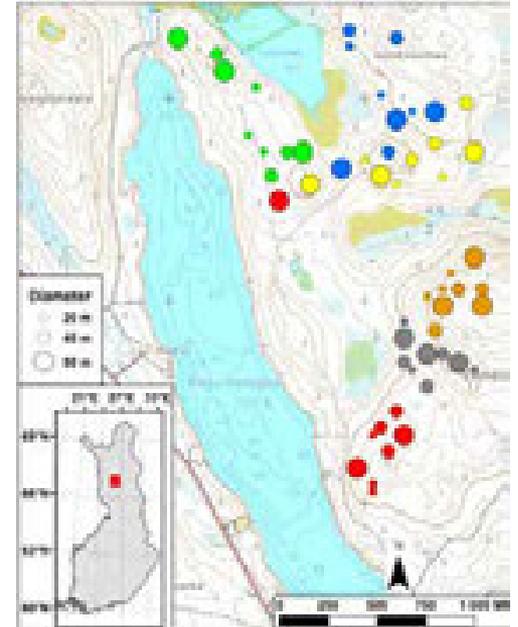
Age of seedlings, year

Regenerating Scots pine or Norway spruce forests using gap cuttings



The experiment for Scots pine was designated 70 km north from Rovaniemi 2010.

The seedling establishment was modelled after 5 year's natural recruitment. The number of seedlings was enormous (> 15000 seedlings ha^{-1}). But the growth is still a question.



Gap cutting experiment in a Norway spruce forest near Tervola (by Hannu Hökkä and Jaakko Repola (Luke))

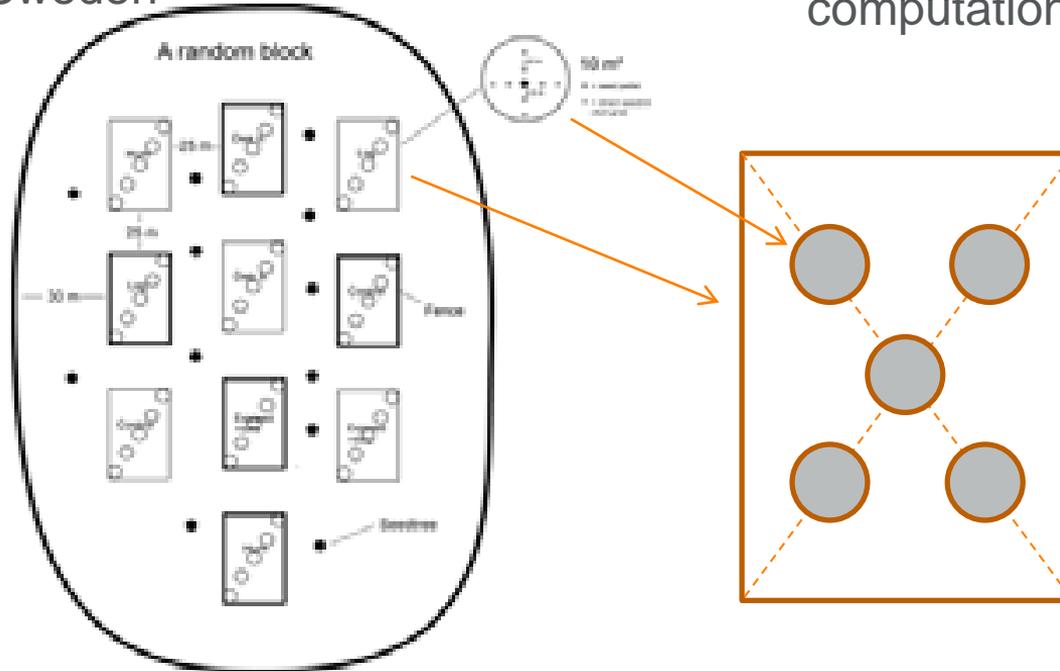


Seedling establishment was good, problems in the growth near the forest edges.

The effect of soil scarification and reindeer grazing on the establishment and growth of the seedlings

6 blocks situated in Finland and Sweden

Measured in 2019, computations starting



Marssonina betulina

Sirococcus conigenus

Snow damage

Birch leaf-roll virus

Rhizosphaera kalkhoffii

Lirula macrospora

Mycosphaerella pini

It is crucial to investigate how pests and diseases thrive in forests of Lapland.

Forest pests in Lapland?

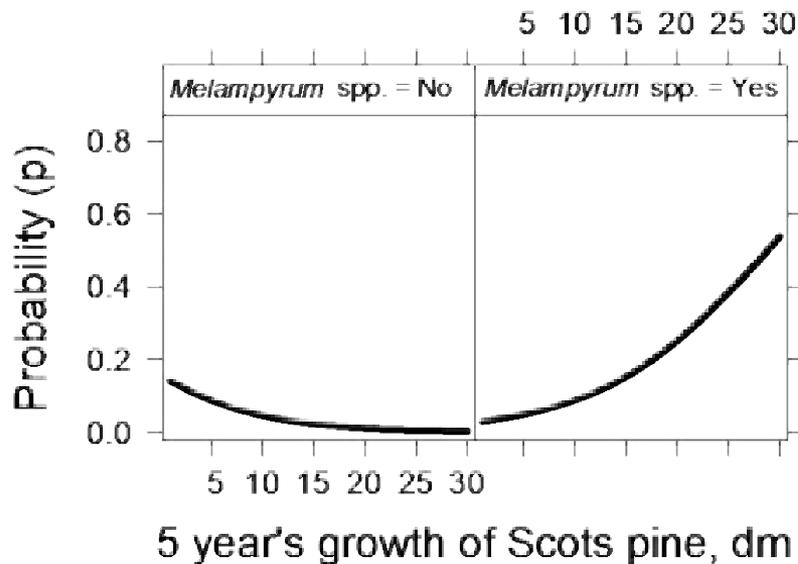
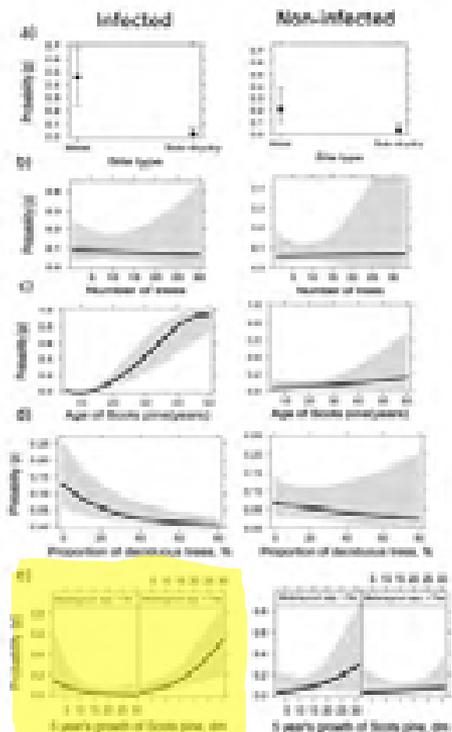


At stand level, pine stem rust can be devastating, so tree species should be selected thoroughly especially for nutrient-rich soils.

Is pine stem rust a serious threat to pine forests in Lapland?

Example: Forests are growing better, but.....

Many things affected the probability of rust infection. Deciduous mix decreases the probability but increased height growth increased the probability of infection.





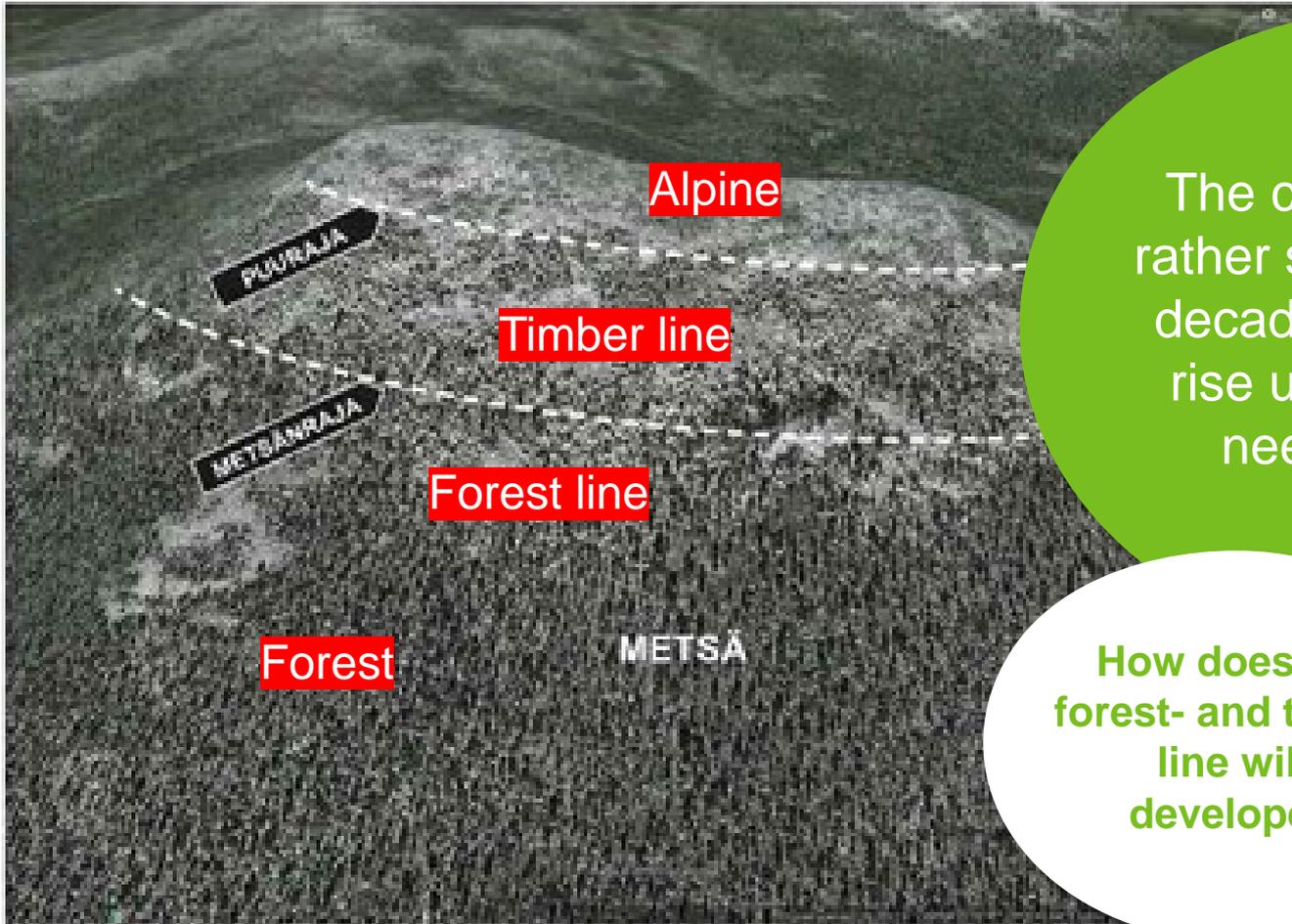
Pine is more sensitive than spruce. Half of pine seedlings die, if there is ice formation on forest ground or no snow cover on three consecutive winters.

How do tree seedlings survive in changing environment?



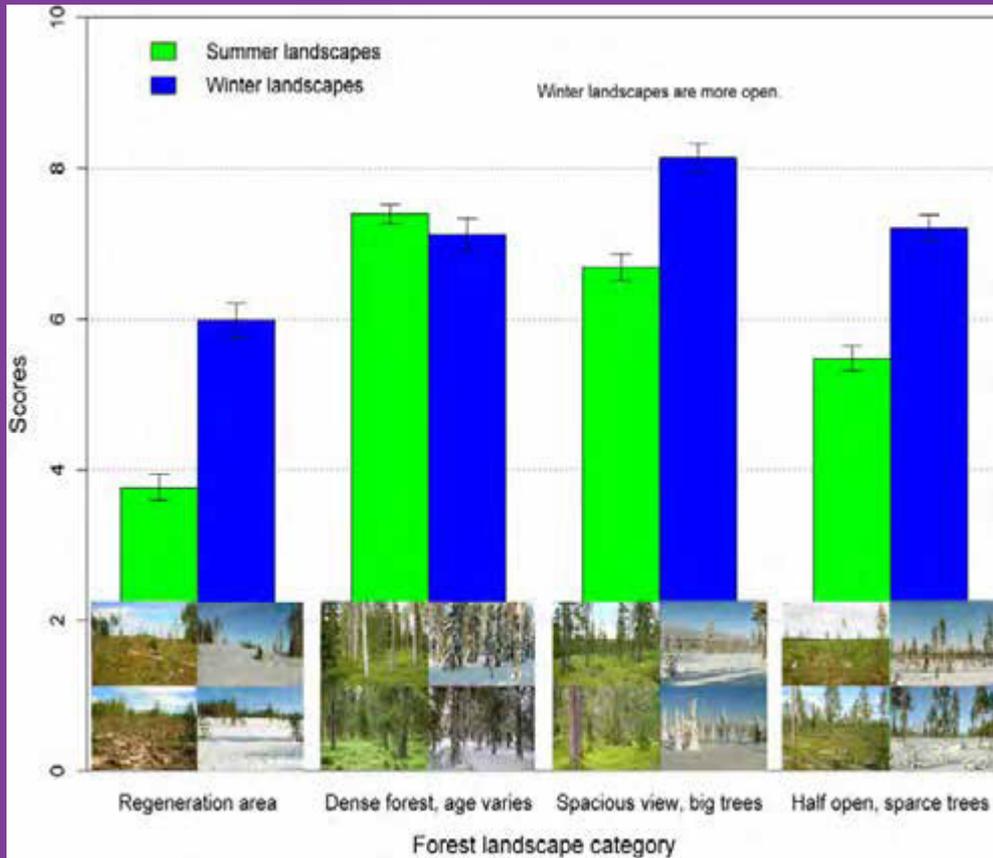
Living and subfossil pines in Lapland give an excellent tool for investigating historical climate changes.

How has climate changed?



The changes have been rather small during few last decades, but forests may rise up in the future. We need to monitor the changes.

How does the forest- and timber line will develop?



Clearcuttings and soil scarifications are not liked as tourism environments in the summertime. In the wintertime almost all the vistas are at least moderately liked

What is the opinion of foreign tourists towards different forest landscape vista types?



**Thank
you!**