Reindeer reduce topsoil roots and explorative community root traits

Horizontal and vertical root distribution in oligotrophic northern pine forests

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Background

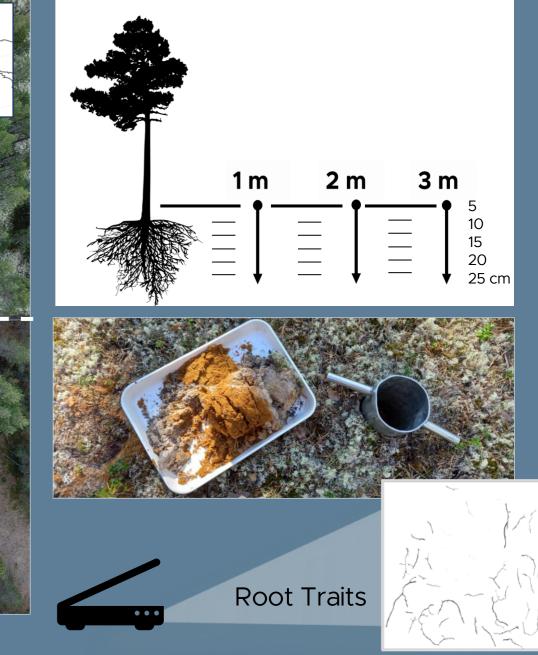
Reindeer:

- remove lichen
- trample in the open
- extremify soil temperature
- dry the soil

Study Site



Method



Results

Depth Shift 28 % topsoil root reduction (39g) 300 Grazed Fine Root Biomass $[gm^{-2}]$ Not Grazed 15 20 25 Depth [cm]

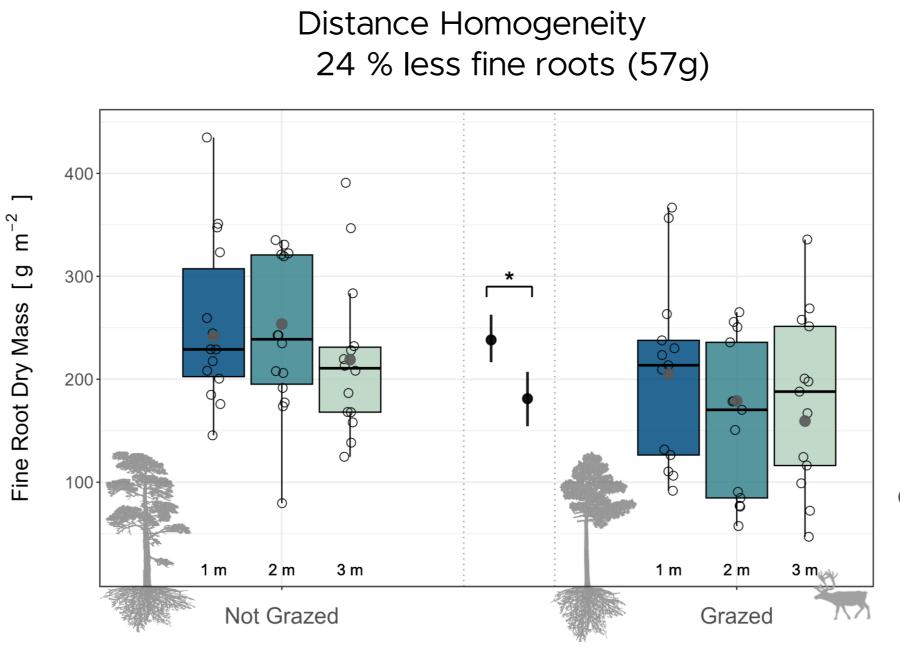
Does Grazing ...?

Reduce root biomass

Change root traits

Impact topsoil roots most

Interact with tree distance



Grazing Distance Depth Grazing x Distance Fine Root Biomass - Root Length Density Grazing x Dept Branching Frequency - Average Diameter -0.9 -0.6 -0.3

Trait Coherency & Distance?!

Heavy reindeer grazing forces fine roots in deeper soil homogeneously across tree distance and the reduction is strongest in the topsoil. Similarly, explorative root community traits follow mass the distribution patterns, but additionally, distance and the interaction of grazing and distance have a weak effect. Overall, community root traits suggest vulnerability of ericaceous shrubs to reindeer grazing belowground, potentially more so in the open.





standardized estimates