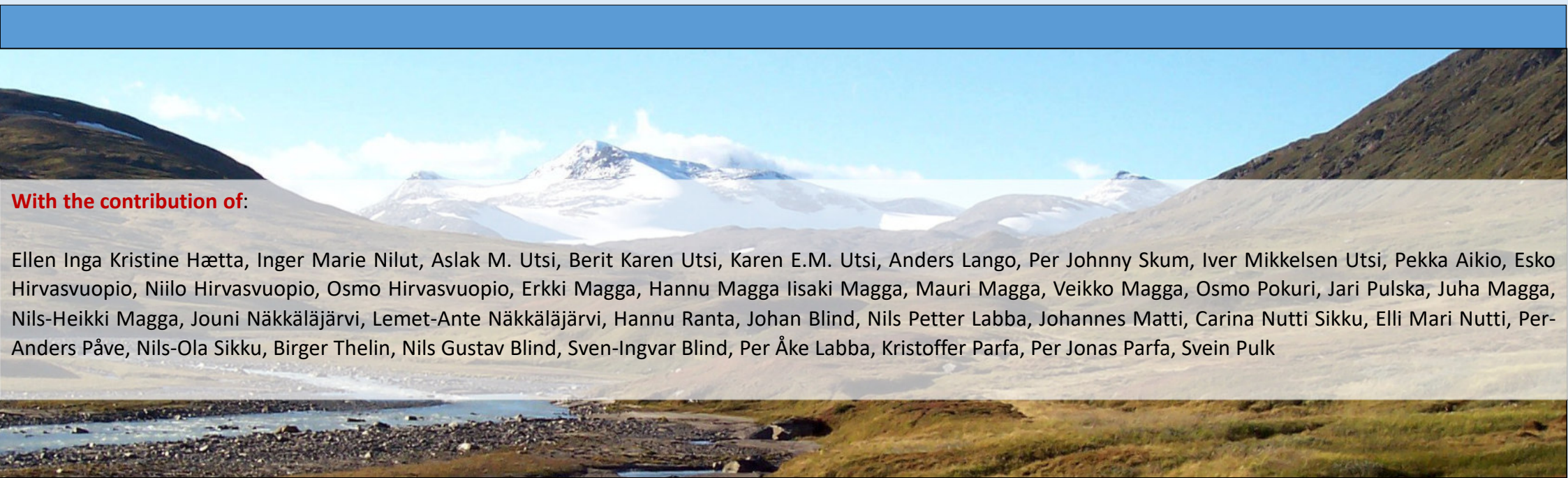


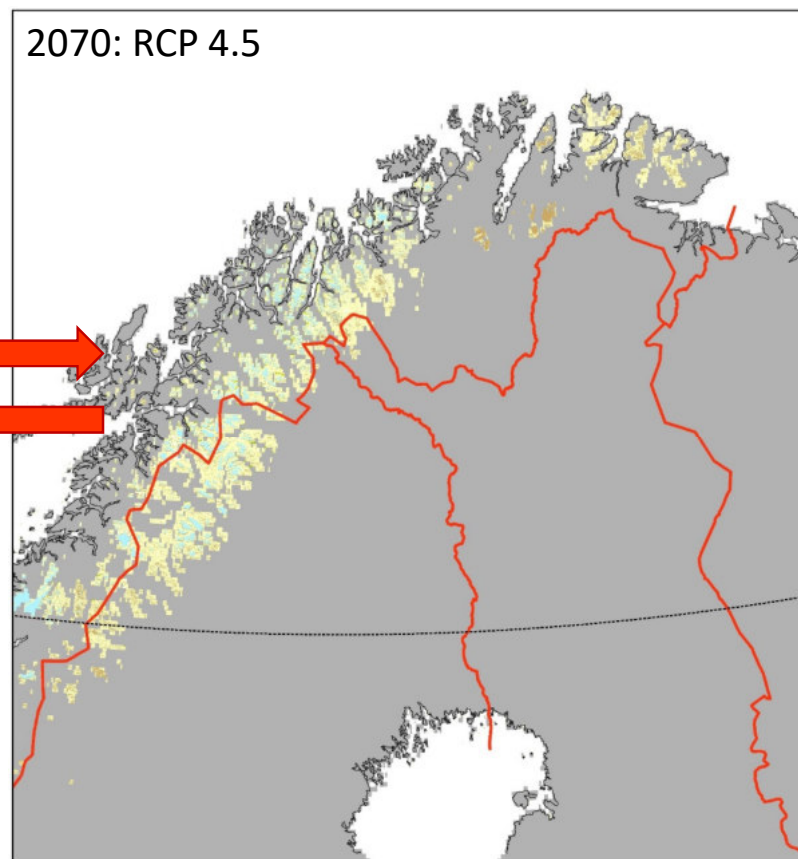
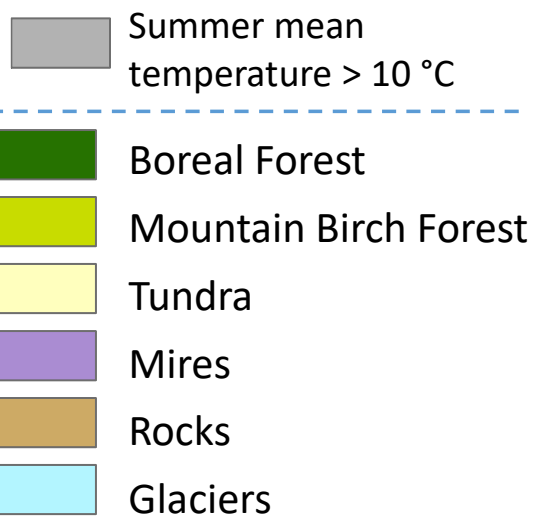
”Trees belong to the forests, not to the mountains.” - Sámi reindeer herders' perspectives on tundra shrubification

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Sweden

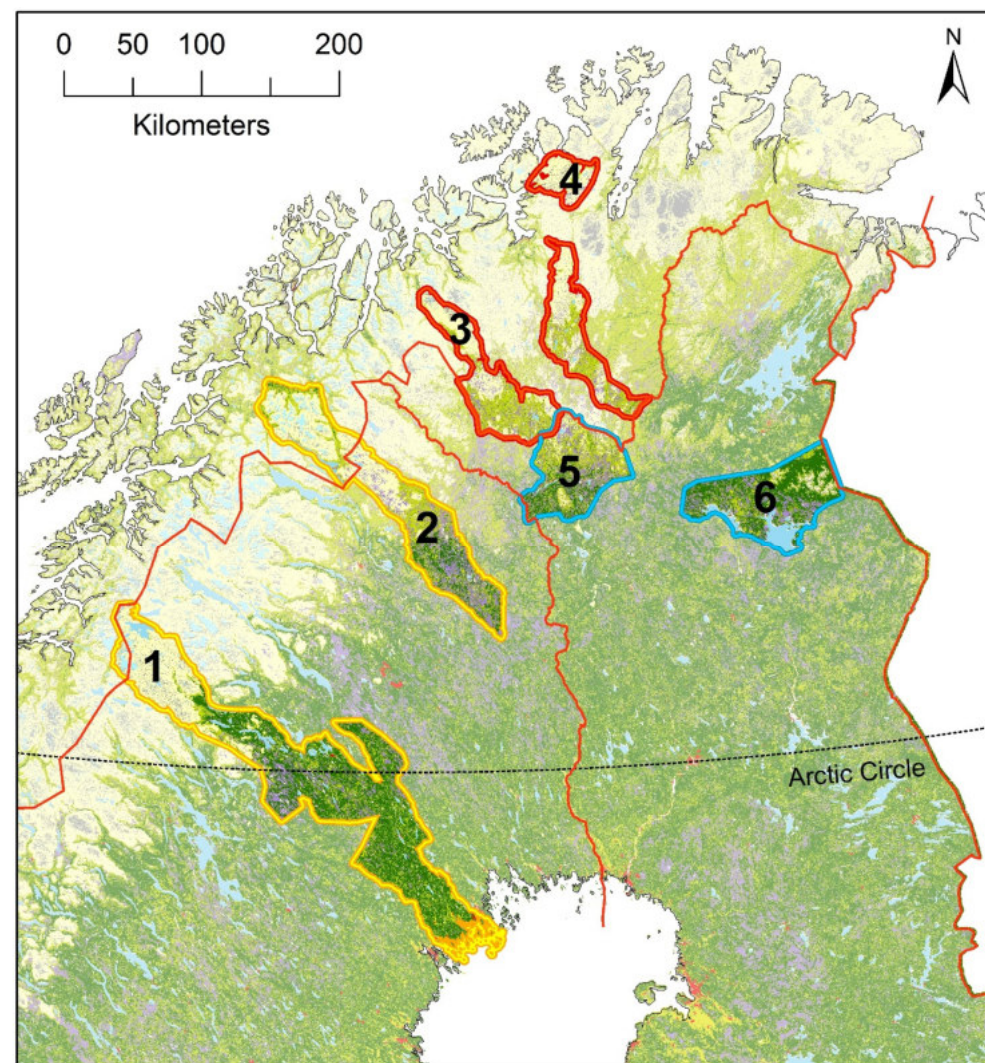
- 1 – Tuorpon
- 2 – Saarivuoma

Norway:

- 3 – Beahcegealli
- 4 – Fiettar

Finland:

- 5 – Näkkälä
- 6 – Lappi



Observed changes in the landscape:

- changes in seasonality
- More extreme weather events
- unstable weather (i.e. unreliable)

- Abiotic factors
- Earlier landuse (= people)
- Herbivores

➔ **Increase of trees and shrubs** observed in **all districts**, but to varying degrees

“Trees have started to grow so much, especially in recent times. You can say in a 20 year time span. You can see in all ways how the earth, the land has changed.” (Beahcegealli, Norway)

“Small brush and shrubs are growing higher and higher up the mountain, where they shouldn't be.” (Saarivuoma, Sweden)

“There now are trees on the mountains where they have never been before” (Fiettar, Norway)

Abiotic drivers



Former land use



<http://www.wikiwand.com/sv/K%C3%A5ta>



Source: Ájtte Swedish Fjell and Sámi Museum, Jokkmokk, Sweden

“ Trees grow especially in the old places where people lived ... Our parents used to cut them down. It’s more like what you did there not whether it was warmer by some degrees.” (Näkkälä)

Herbivores



www.birchmoth.no

Access of reindeer to the vegetation may create distinct patterns in the landscape:

“You see the tree line has moved upwards, because reindeer haven’t been grazing there.” (Saarivuoma)

“Where reindeer cannot get to, there the forest will always grow. There you can really see the difference that the reindeer can create.” (Saarivuoma)

“We can’t be sure what effect now the reindeer will have.” (Näkkälä)

“You’d need huge herds to achieve that. The thing limiting the size of the herds is the winter” (Tuorpon)



No consensus on impacts of reindeer on shrubs / tree growth



Interaction of **vegetation** – grazing - snow/weather:

➡ more trees in treeless areas could mean more snow & makes digging difficult (**all districts**)

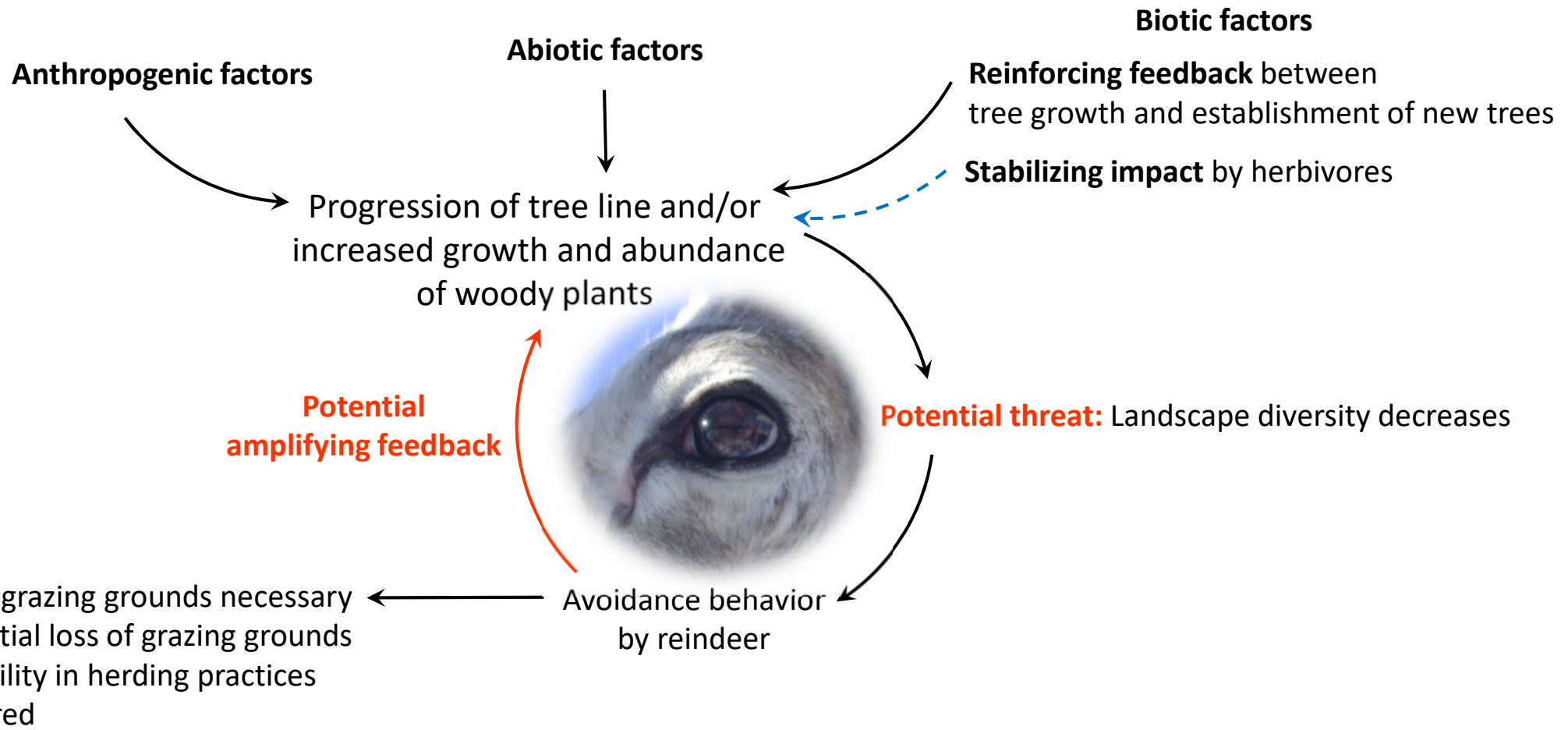


➡ “Trees belong in the forest, not on the mountains” (Saarivuoma)

But: Landscape variation in space and time important (**all districts**)

“... we have both, **if it is only one then it is not good**, if it is only fell or mountain. **You need some of both**. If it is only **mountain** it is a **windy hard place**, and if it is **only forest** that is not good either because there is **too much snow** so the reindeer can't reach to the bottom of the snow cover - **so we really need both a little bit of both**.” (Beahcegealli)

➡ Not commonly seen as a problem,
but dependent on **temporal and spatial context of the herding activities**



Transformations of ecosystems:

Requires understanding of **changes in ecological networks**

→ Potential conceptualization of **novel governance?**

→ contest the legal background and institutions that govern reindeer husbandry in the Nordic countries

“Don’t write any doomsday prophecy.” (Tuorpon)



Questions & comments?

