

# Land-use history influence the vegetation in coniferous production forests in southern Sweden

Jesper Karlsson  
Supervisor: Dennis Jonason



## Introduction and aim

In Sweden there has been a 90% decrease of semi natural grasslands since the late 1800s, largely due to afforestation. Since grassland plants are known to respond slowly to environmental change,

this study aimed to investigate if signs of grassland management could be found in coniferous production forests more than 80 years after the management has ceased.

## Method/Approach

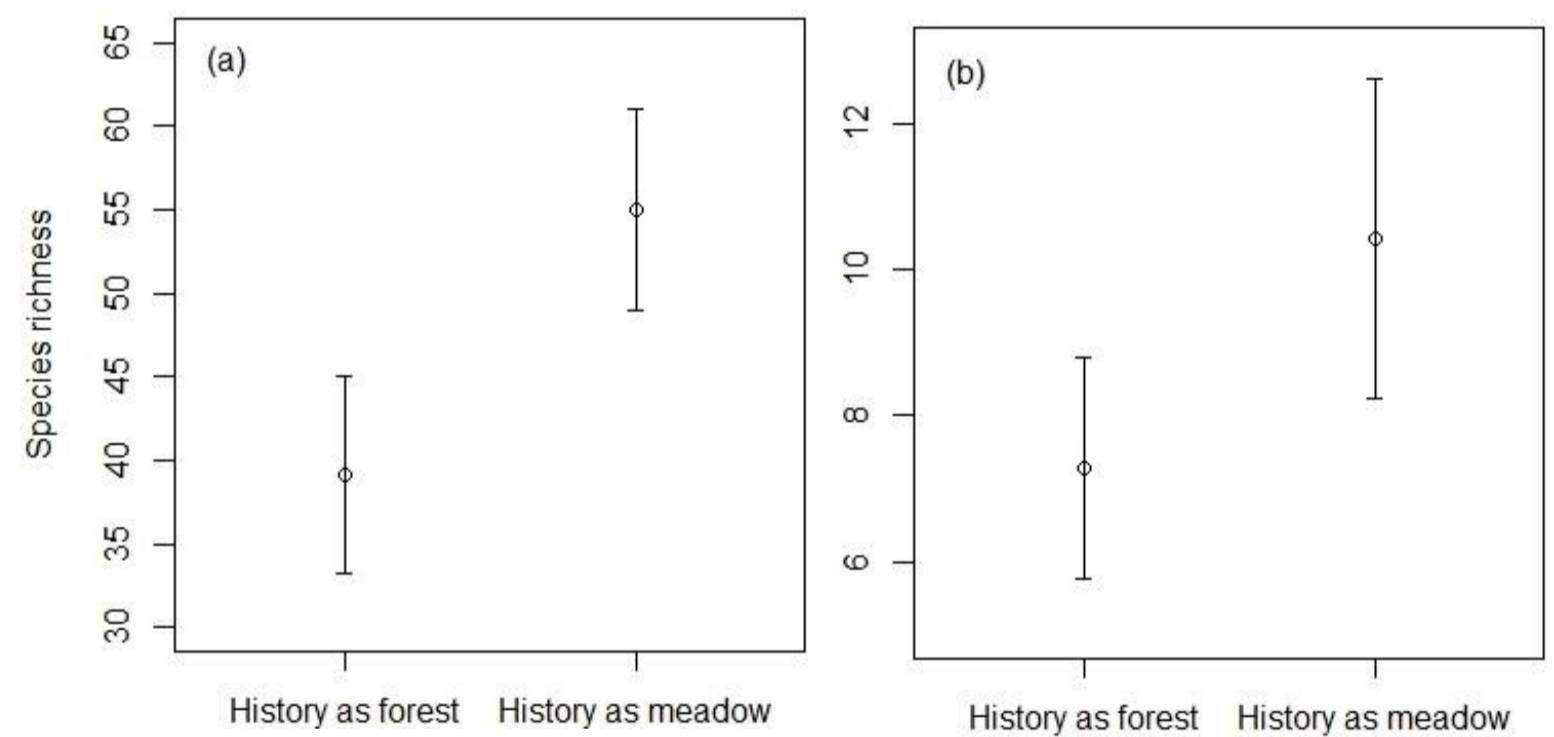
Historical land use maps from the 1870s were used to identify forests with a history either as meadow or as forest. Plant surveys were performed in one hundred sample plots (Ø 2m) at each

forest and in reference grasslands. Environmental data and additional plant data from clear cuts to compare with data from this study were obtained from Jonason et al. 2014.

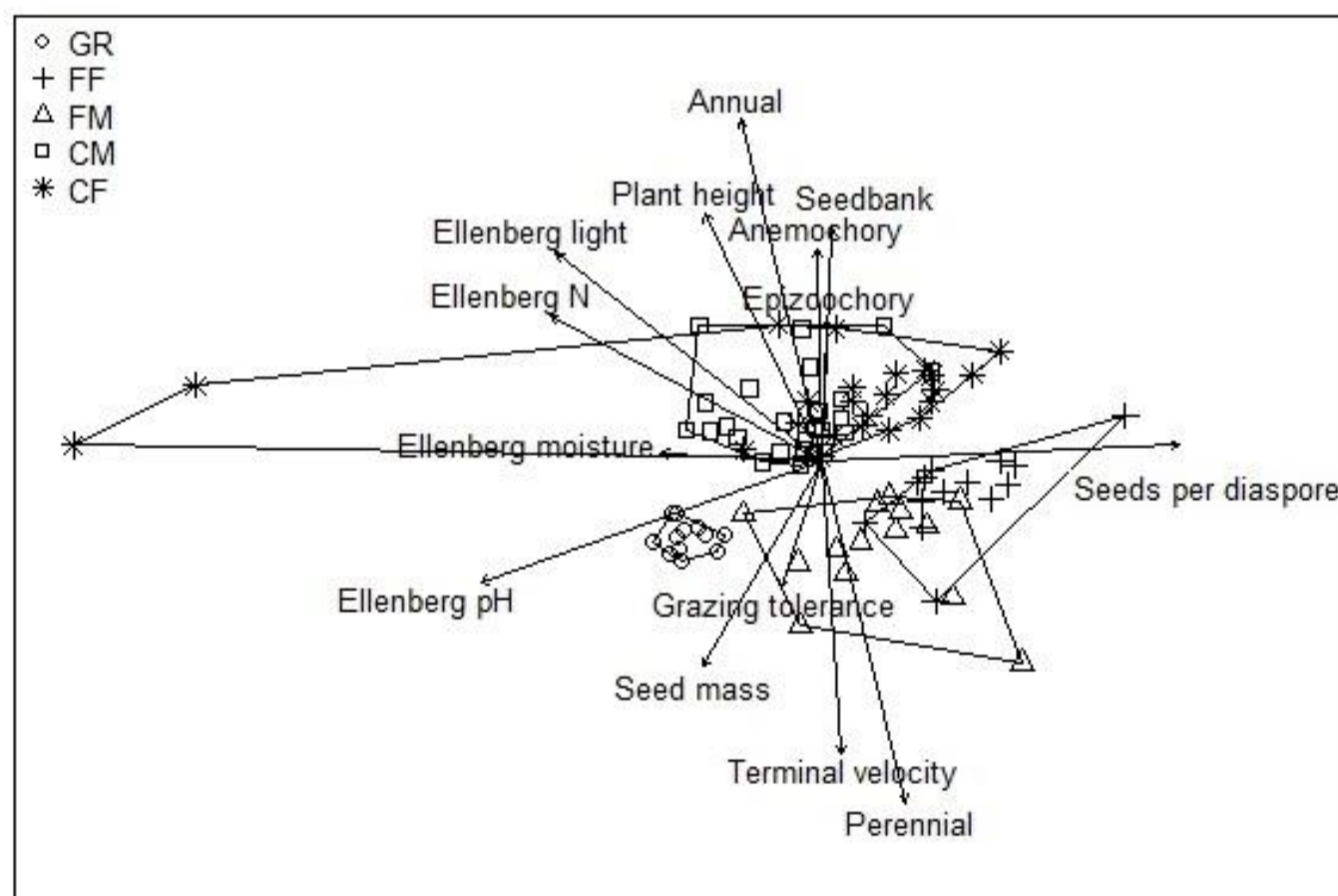


## Results

- The average species richness as well as the richness of grassland indicator species were 30% higher in forests with a history as meadow compared to as forests.
- Forests and clear-cuts with a history as meadow tended to be more similar to reference grasslands regarding plant species composition compared to those with a history as forest.



Average plant species richness and corresponding 95% CI of forests with a history as forest (n=14) and as meadow (n=14) in the 1800s for (a) all species combined and for (b) species classified as grassland indicator species.



Each symbol in the figure represent one of 88 sites (GR = Grasslands, FF = forests with a history as forest, FM = Forest with a history as meadow, CM = clear-cuts with a history as meadow, CF = clear-cuts with a history as forest). Arrows illustrates plant species traits and are based on community weighted means per site.

## Conclusions

The study provide proof of remnant grassland populations in coniferous production forests with a history of grassland management. Since protection of existing

grassland fragments alone is not enough to stop the extinction of grassland species, the result highlights the use of such forests in grassland conservation and restoration.

## References

Jonason D, Ibbe M, Milberg P, Tunér A, Westerberg L, Bergman KO (2014)Vegetation in clear-cuts depends on previous land use: a century-old grassland legacy. Ecology and Evolution 4, 4287–4295