

Spatiotemporal habitat use of grazing cattle in heterogenous grasslands in Tinnerö, Sweden



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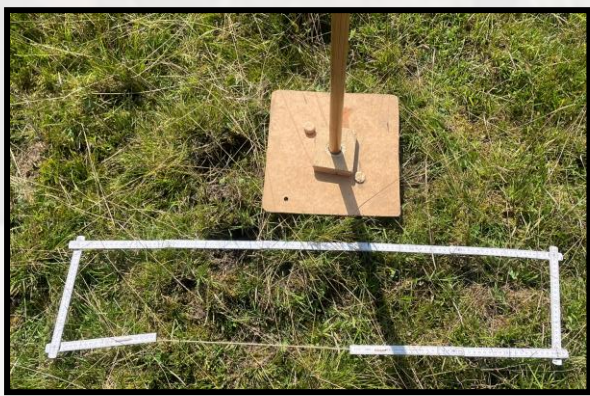
Background

Grazing has shaped vegetation communities for millions of years and continues to do so today. Grassland ecosystems are particularly affected by grazing. Various studies have examined the effect of grazing on the characteristics of grassland vegetation. However, the reverse effect of grassland heterogeneity on grazing behaviour has received less attention and remains poorly understood.

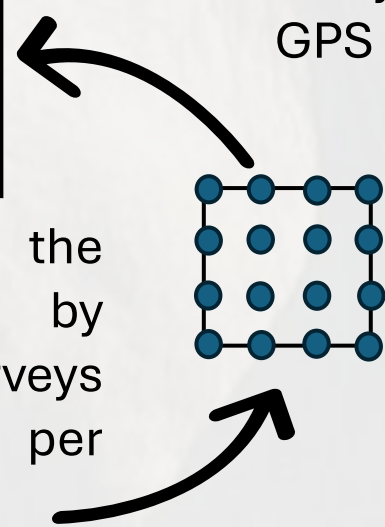
Aim

Understand the effect of environmental factors and vegetation characteristics on the habitat utilisation of grazing cattle.

Methods & Materials



The vegetation within the pastures was assessed by performing vegetation surveys using 16 1x0.2m plots per hectare grid-cell.

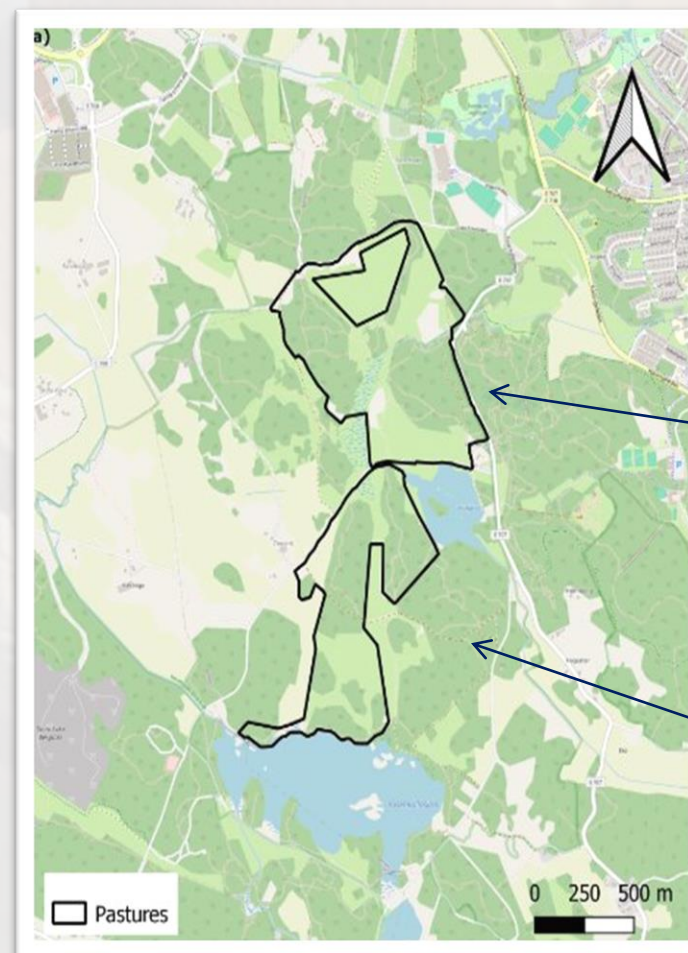
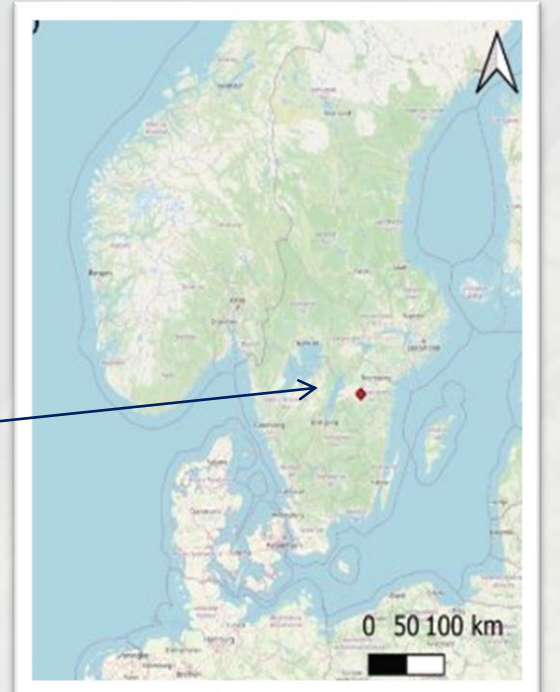


A grid-based density for cattle was calculated using GPS data points transmitted every 10-15 minutes using GPS collar trackers.



Study area

Two pastures with diverse vegetation structure within the Tinnerö Nature reserve outside of Linköping, Sweden.

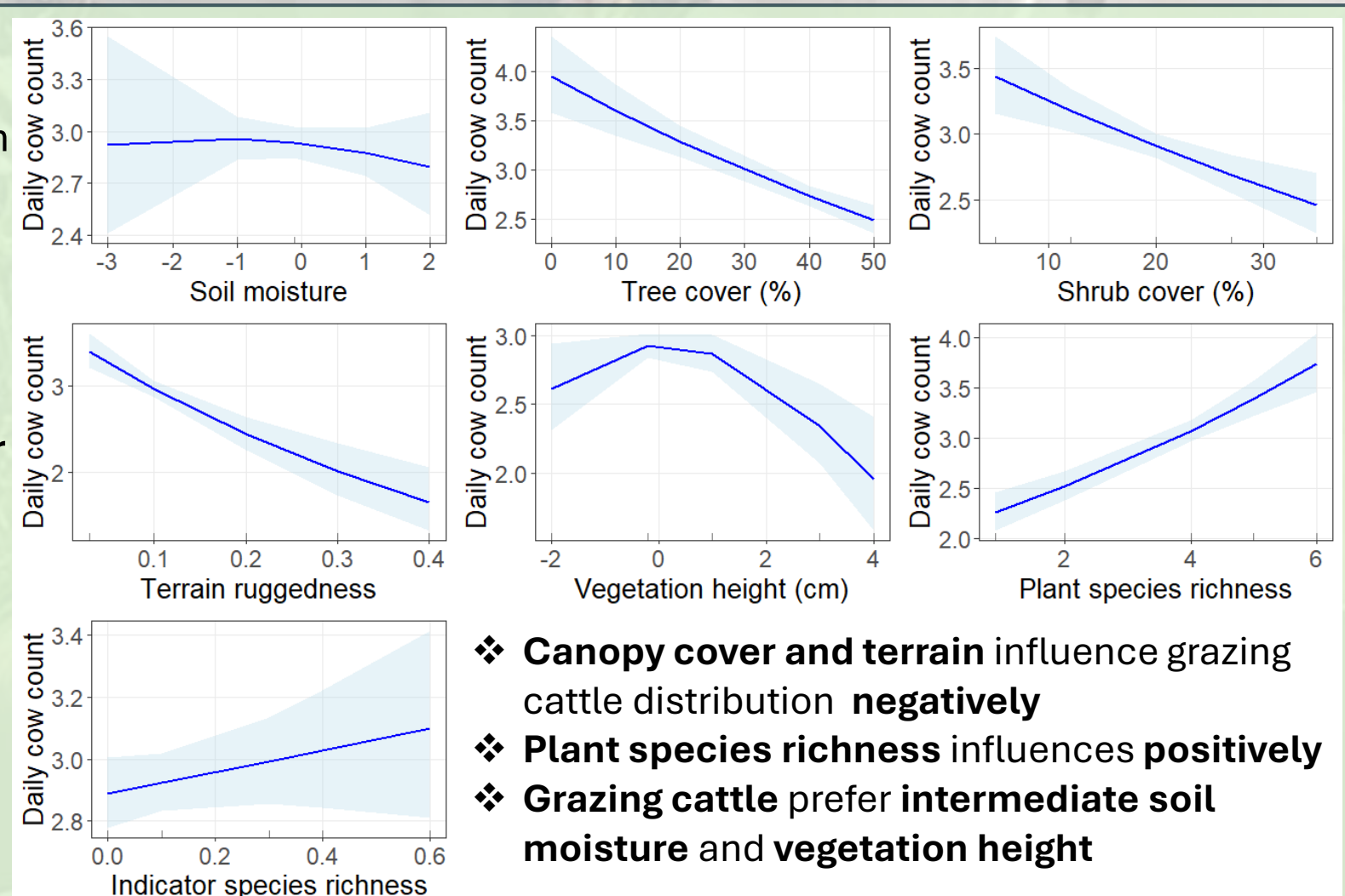
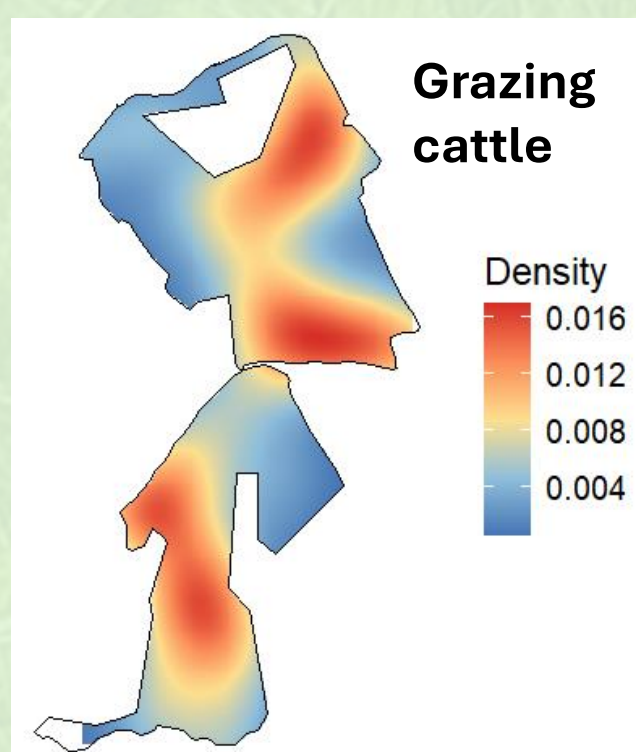
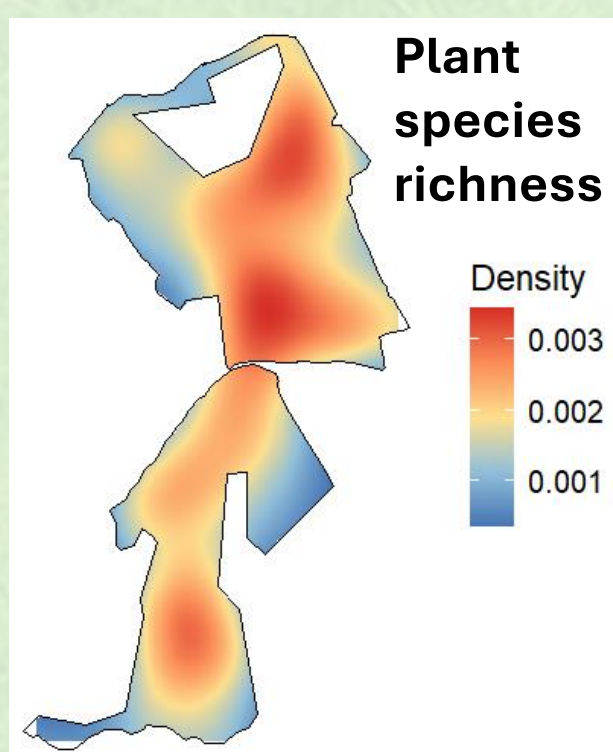


Vattenålkarebacken
61 ha

Långbacken
46 ha

Results

- ❖ **Grazing decreased vegetation height** during the study period
- ❖ **High species richness in areas of high grazing cattle density**
- ❖ **Cattle prefer certain areas** on pastures **based on different environmental factor** and **vegetation characteristics**
- ❖ **No significant differences** in habitat preference between **grazing** and **resting behaviour**



- ❖ **Canopy cover and terrain influence** grazing cattle distribution **negatively**
- ❖ **Plant species richness** influences **positively**
- ❖ **Grazing cattle** prefer **intermediate soil moisture** and **vegetation height**

- ❖ Weather factors **only influenced** habitat preference in **resting** cattle
- ❖ **Increased temperature** and **precipitation** increased the preference for **canopy cover**



Key insights

- ❖ Grazing efficiently **reduces biomass**, consequently **increasing biodiversity** in the following season.
- ❖ Highlighted by high species richness in areas of high grazing density.
- ❖ Grazing behaviour and habitat preference are influenced by multiple environmental factors and vegetation characteristics.
- ❖ The negative linear relationship between tree cover and cattle density, combined with a significant preference for medium vegetation height, highlights **the preference of grazing cattle for open grassland areas**.
- ❖ However, the increased preference for shelter (canopy cover) observed in resting cattle at higher temperature and precipitation levels emphasises the **importance heterogenous grasslands for grazing cattle welfare**.