

Woodland grazing - a tool for conservation of biodiversity in Denmark

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Woodlands are habitats for more than 60 % of the wild plant and animal species, but many species are endangered due to present days dark and uniform forests.

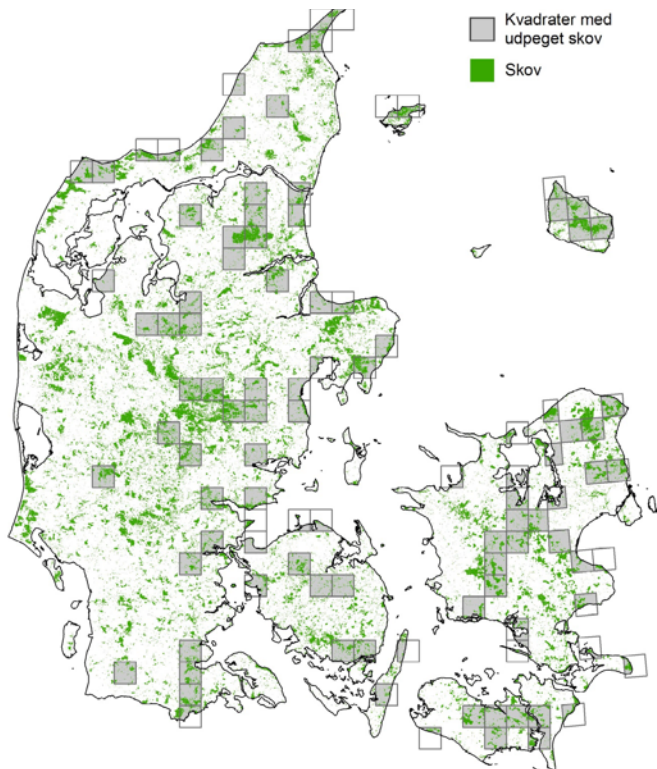


Argynnis paphia – one of the butterflies in light-open woodlands

How to restore and manage forests as habitats for biodiversity?

Proposal to appoint of 13 % of the forest to create a network of “untouched forest”

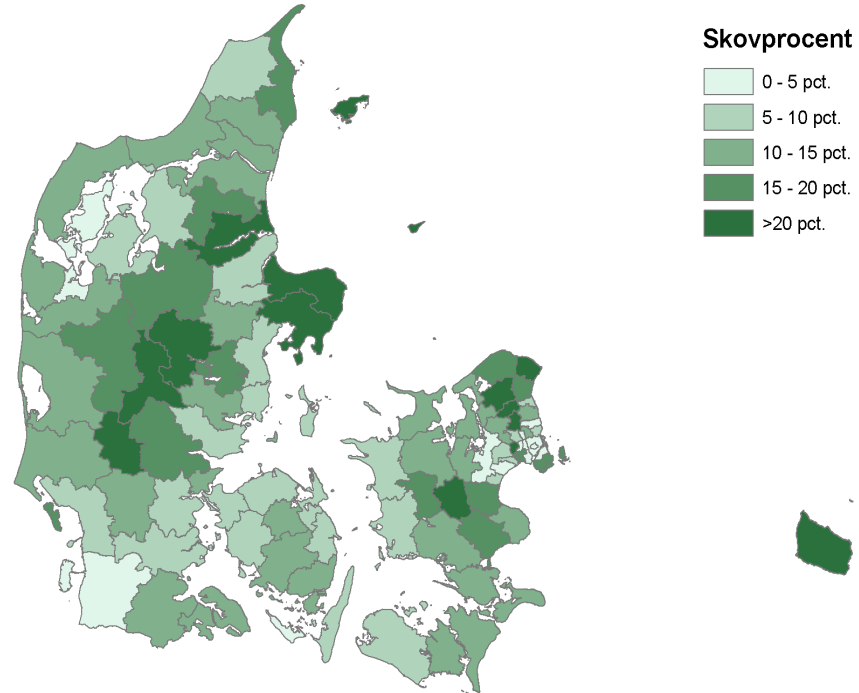
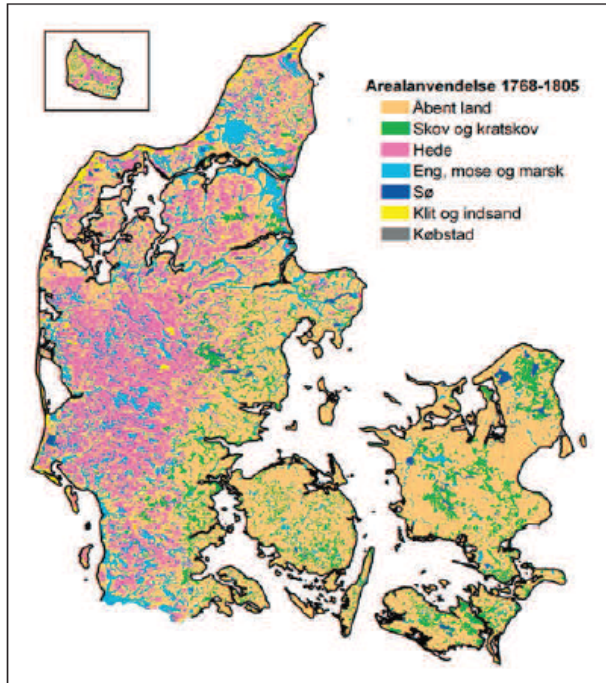
! (Pedersen et al. 2015)



Grazing – especially natural grazing with wild animals - is supposed to be an important tool.

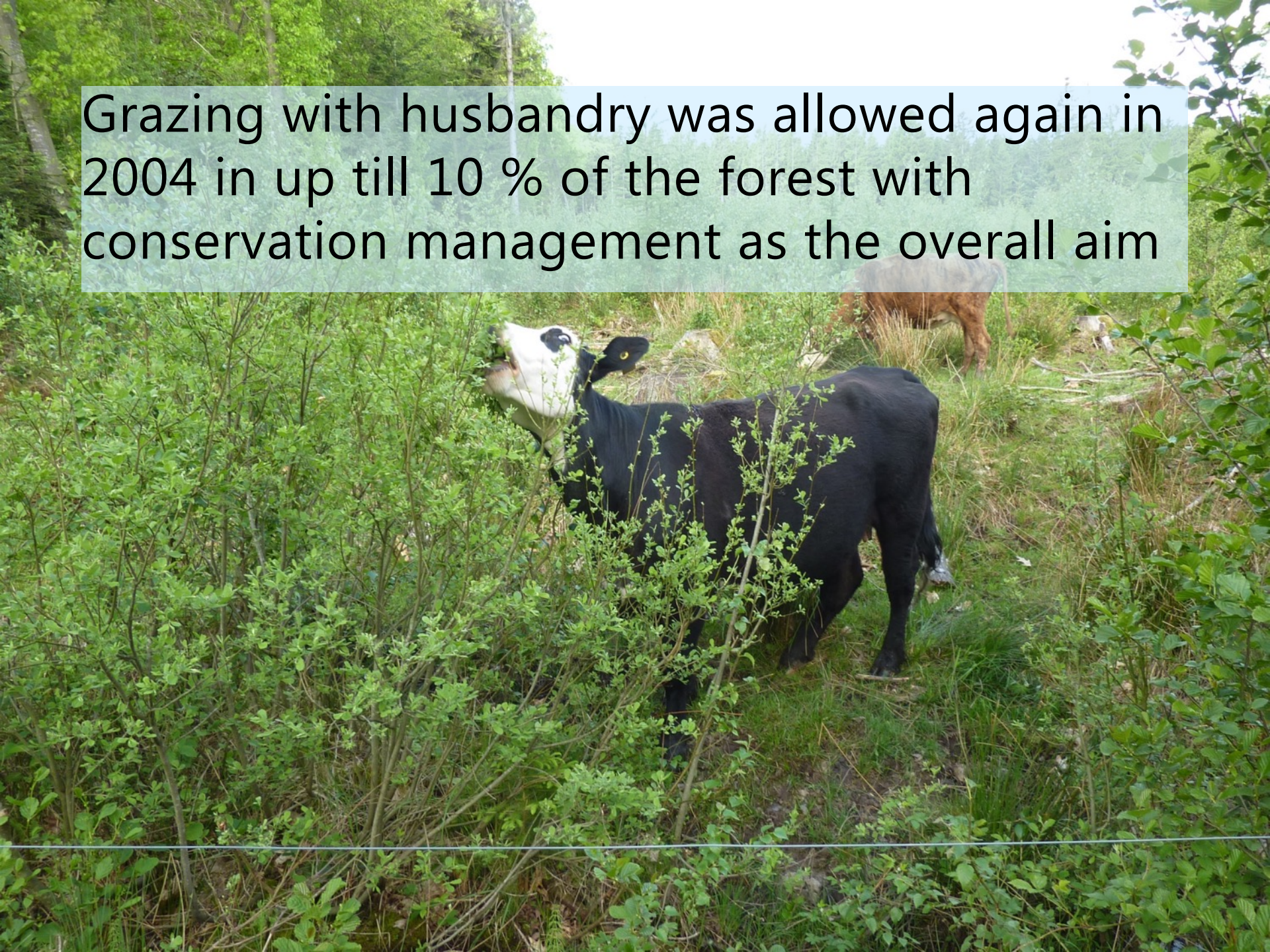
The only wild grazers are roe-deer and an increasing number of red deer and fallow deer.

Grazing was forbidden for 200 years due to the poor state of the forests



The forest was reduced to 2-4 % of the land area around 1800 due over-exploitation and partly replaced by heathlands. To-day the forest cover 14 %. Dominated by monocultures and Norwegian Spruce to most common tree. The goal is to reach 25 % in 2100

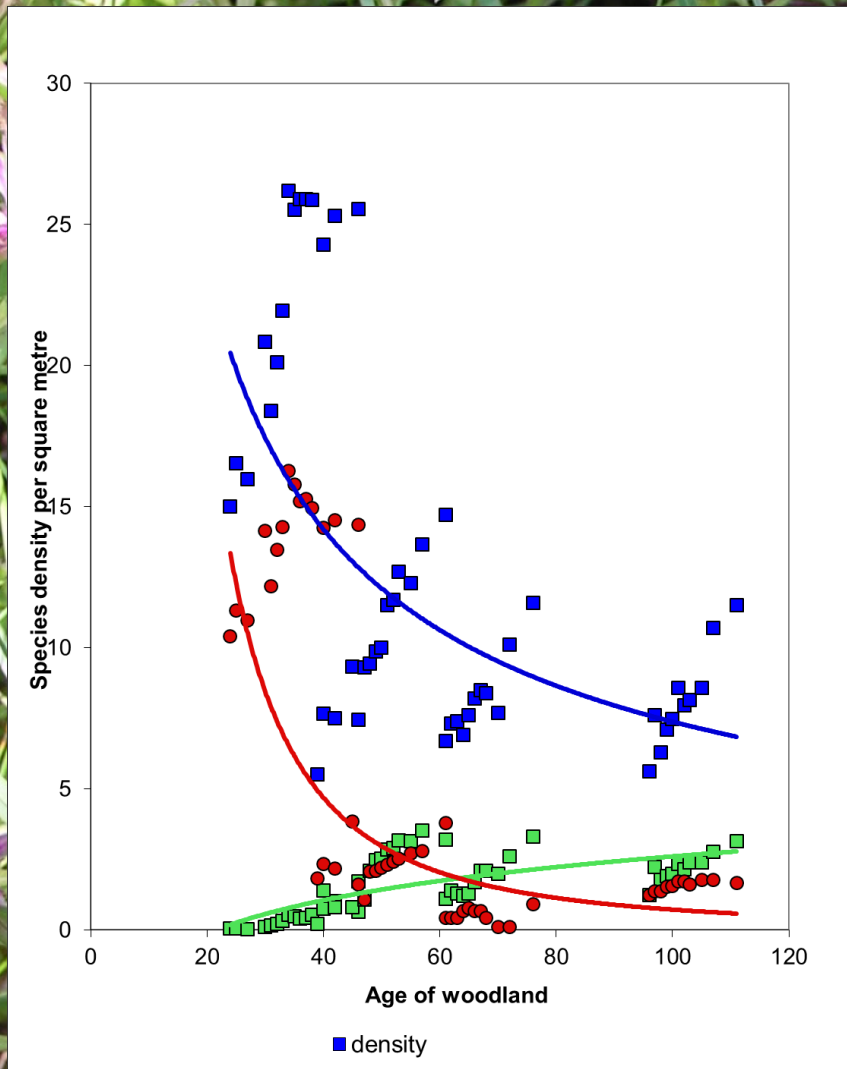
Grazing with husbandry was allowed again in 2004 in up till 10 % of the forest with conservation management as the overall aim



Effect of 25 years cattle grazing in ancient oak woodland at Mols Bjerger



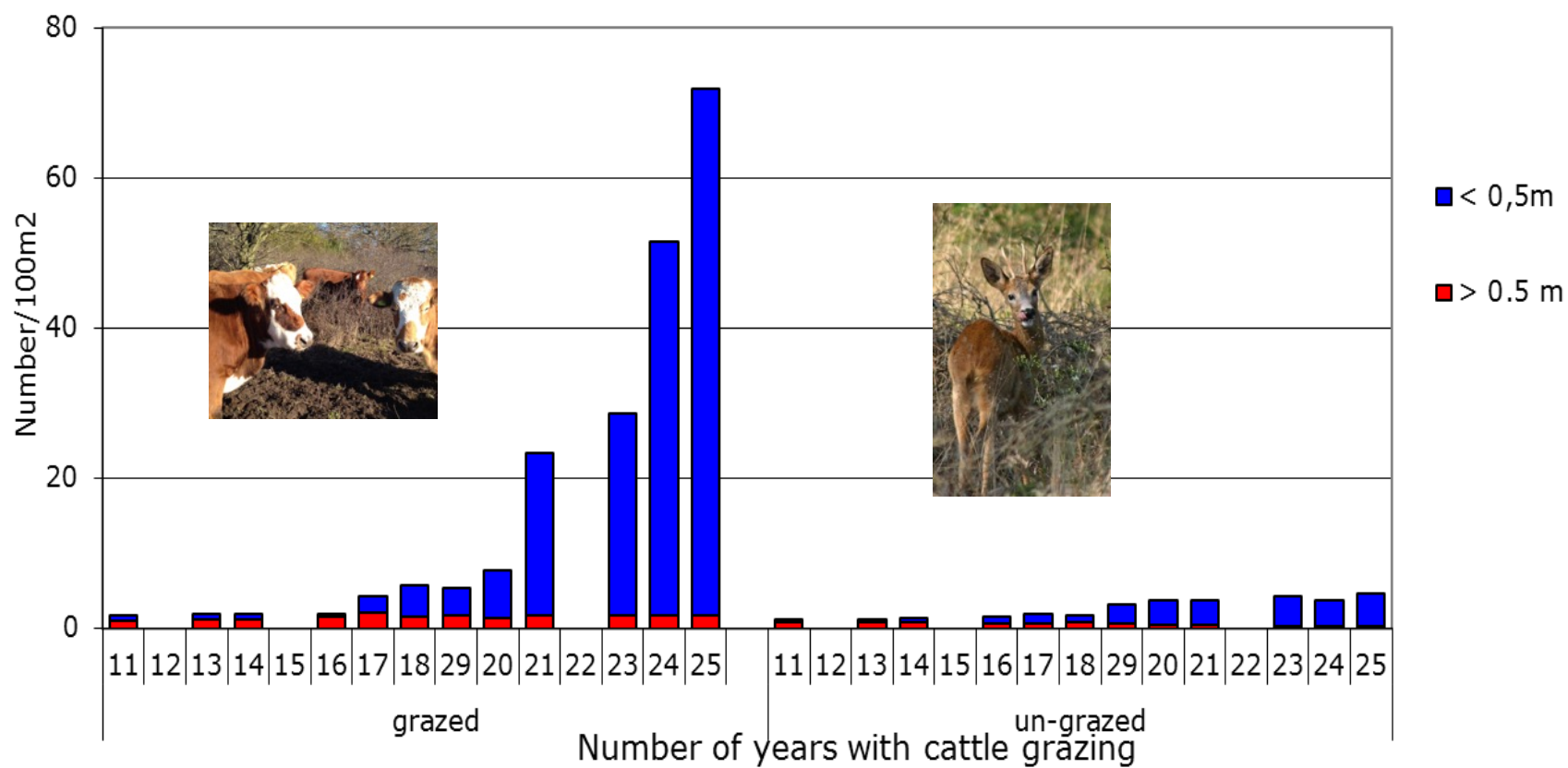
Grazing with "forest cattle" was introduced in 1986 in half of the wood, the rest being managed as untouched



Development in density of species in relation to age of the woodland and years of grazing.
Blue: total number of species
Green: Forest species
Red: Grazing dependent species

Melampyrum cristatum – a rare management dependent species

Density of animal spread woody species



Germination at cattle dung gives a significant higher survival rate of seedlings



Seedlings of 26 species in the forest and 112 species all together was registrated at cattle dung pads

The dung pads covered 1 % of the cattle grazed area with >5000 seedlings/ha (Buttenschøn 2008).

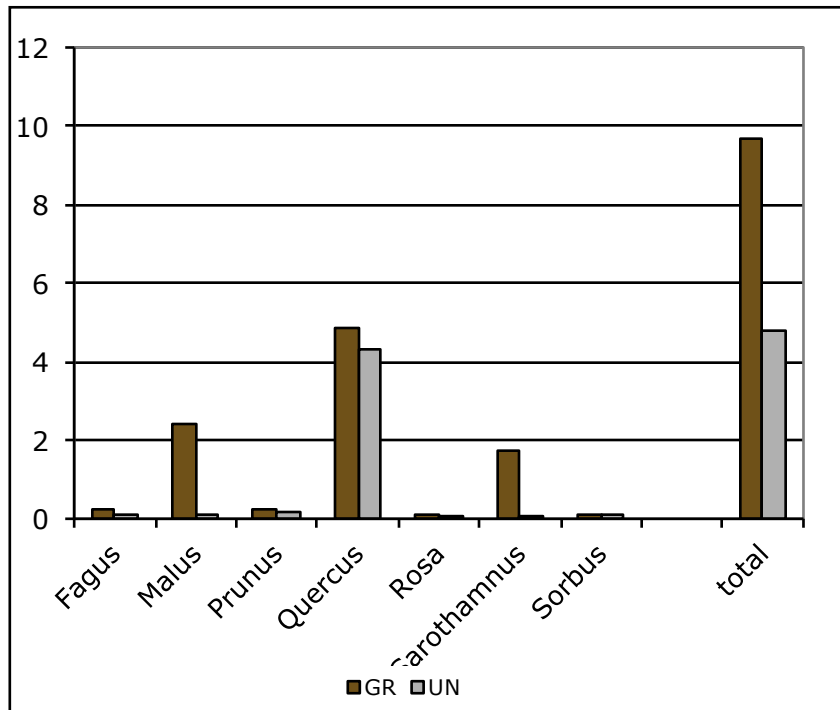
“Short-term” effect of cattle grazing in oak woodland

- More dense and species rich ground vegetation
- Heterogeneous vegetation structure
- More seedlings
- More available browse
- Faster decomposition

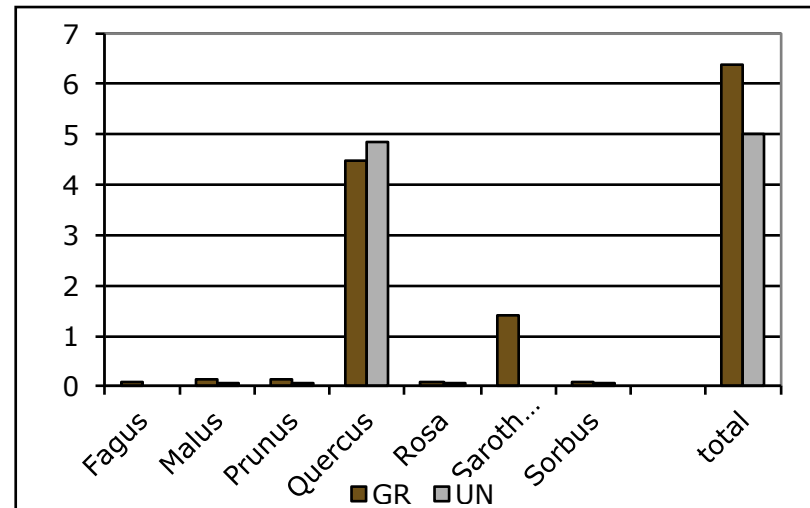


Can long-term effect of grazing maintain the oak woodland habitat?

Average numbers from 11-25 years of grazing show a tendency to better survival of oak under grazing



Number of seedlings/100 m²



Death-rate of seedling/100 m²

Woodlands offer all-year round grazing with robust breeds but few ha woodlands are grazed





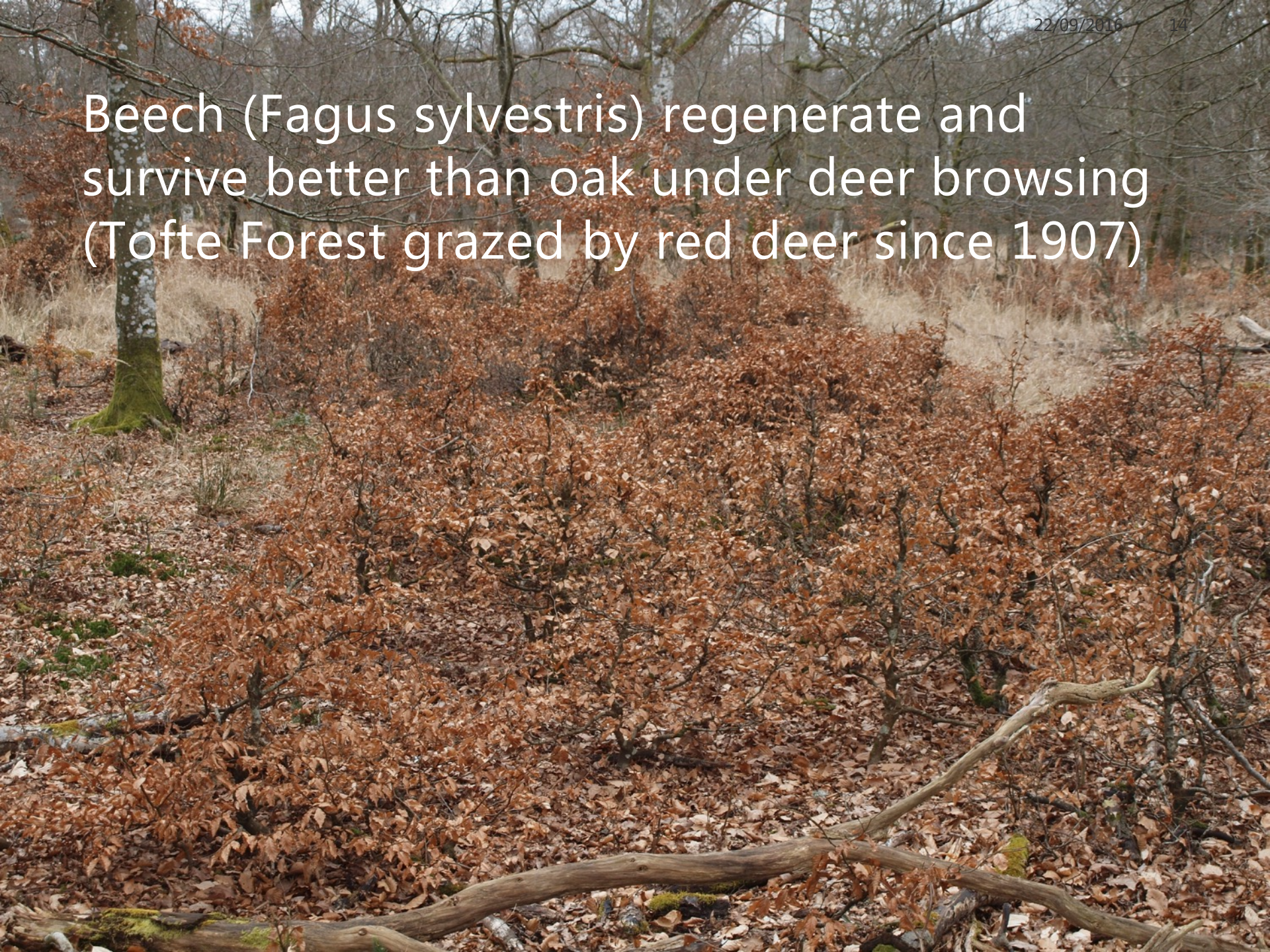
Foto Michael Sand

Can free-roaming deer manage woodland habitats



Wooded meadow maintained by red deer

Beech (*Fagus sylvestris*) regenerate and survive better than oak under deer browsing (Tofte Forest grazed by red deer since 1907)



Reed deer and fallow deer act as key- stone species-
But “grazers” or other kind of disturbances may be
needed to maintain oak woodlands

