Theme preference: Ungulate Herbivory as a Landscape Process (Session 6)
Oral presentation

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TREE REGENERATION IN A VEGETATION MOSAIC OF WOODLAND, HEATHLAND AND FORMER ARABLE LAND DURING 30-YEARS HORSE GRAZING

Abstract

The impact of horse grazing on vegetation patterning and processes were studied during a 30-years period in a small-scale (100 ha) nature reserve, composed of heathland, woodland and abandoned arable fields in the Netherlands. Vegetation development, tree invasion and forest regeneration, was monitored using aerial photographs (1970, 1986, 1999), permanent quadrates and transects. Habitat selection of ponies and rabbits (*Oryctogalus cuniculus*) was monitored by visual observation and faecal pellets counts, respectively.

Results indicate that extensively grazing by Iceland ponies (*Equus caballus*) in a constant density of 10 animals per 100 ha^{-1}, resulted at the landscape level in a mosaic of grass-, heath- and -woodland vegetation with a low shifting rate between succession stages. Tree cover increased by 24% in 30 years and former arable fields were locally invaded by heath (*Calluna vulgaris*) dwarf shrubs. The initially high density of rabbits in the area rapidly decreased during the first ten years after horse grazing was introduced. After 30 years, ponies still grazed predominantly on grassland vegetation, established on former arable fields.

A species-specific response of shrub and tree species to grazing explained vegetation patterning. Grazing had hardly any effect on the invasion of heathland by Scots pine (*Pinus sylvestris*), but strongly retarded invasion of former arable fields by silver birch (*Betula pendula*), downy birch (*B. pubescens*) and buckthorn (*Rhamnus frangula*). Pedunculate oak (*Quercus robur*) was for its establishment fully dependent of thorny bramble (*Rubus* spp.) shrubs, which protected saplings from heavy grazing by horses.