

## **In search for 'new wilderness'**

Wilderness in Europe became a lost paradise after the 11th century. As the European forests were gradually driven back, wilderness in Europe was thinned out - a process we are familiar with today as deforestation in developing countries. Only a few near-natural wildernesses survived, such as the Bialowieza pristine forest in east Poland, although also here ungulate populations have been largely manipulated by men over the last centuries. Wilderness became a hype which survived on paintings from the Romantic period onwards. In the 21st century, wilderness has a chance to make its comeback as a result of abandonment of agricultural land, to the extent that even aurochs-like cattle and free-roaming horses will dwell again in these wildernesses.

The high agricultural productivity and the resulting lower demand for both agricultural land and farmers creates new chances. Added to this, there is a consumer-driven demand for wilderness in Europe.

A recent inquiry in the Netherlands showed that over 50 percent of the people only consider forest as nature, whereas heathland and other cultural open landscape were not considered to be very attractive. However, it has been postulated among others by the Dutch ecologist Frans Vera that wilderness in Europe was not so much a closed forest landscape but an open park-like landscape, where large herbivores such as aurochs, European bison and tarpan had a central role in ecosystem functioning and structure. This view was proposed at a time that grazing animals in nature areas became a hype for nature managing organisations in Europe. 'New Forest' in the UK became a benchmark for what the European wilderness might have looked like. Since the publication of Vera's book *Grazing Ecology and Forest History* there is an ongoing debate about the openness of post-glacial European landscapes, before men became the most important driving force for landscape change. Due to human activities a large part of the European landscape changed into grasslands, arable land and meadows. Words in the European cultural heritage such as *dehesa*, *polder*, *heathland*, and *bocage* refer to agricultural landscapes. Whether or not the natural state of the European landscape was closed forest or more like a wood-pasture, Vera's vision may be very useful for Europe's future stimulating public demand for open and grazed landscapes. Additionally, a large part of biodiversity, particularly among insects and herbaceous plants species is linked to open habitats.

Do large herbivores exert a major influence on vegetation structure and composition, and are they able to create and maintain semi-open, park-like landscapes? In steppes and prairies trees cannot grow because of climatological constraints, and in the transition zones where steppe and prairie give way to forest, the herbivores actually do keep landscapes more open than they would have been without them. In African savannah over-grazing results in bush-encroachment due to a provoked water-deficit of the grass-layer. It has been observed that at the north-eastern border of the North American prairie the forest line has advanced by several hundreds of kilometres after the extirpation of the American bison. Definitely, ungulate-tree interactions are largely determined by climate. Ungulates' impact on vegetation dynamics also largely depend of spatial and time scales. During the last century ecological knowledge of the complex interactions between environmental and biotic factors has made large progress. Integrating this knowledge in simple but strong ecological models might help us to unravel the puzzle. Modelling ungulate-vegetation interactions in both a

retrospective and prospective way, would help to enlarge our insight in ungulates as drivers for landscape development in European landscapes, and to provide the most likely scenarios for the creation of new wildernesses in Europe, but also valuable information for grazing regimes for extensive farming in Europe.

From the perspective of open and grazed landscapes, abandonment of agricultural land can be seen from a positive wilderness perspective, especially if de-domesticated, free-roaming ungulates where to once more dwell throughout Europe.

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