Oak

“The thorn is the mother of the oak” p141

Thorny trees allow oak and other trees to establish.

“Because of the reserve nutrients in the acorn, pedunculate and sessile oak tolerate greatly reduced amounts of daylight relatively well in the first two years of life” p363.

“When the reserves in the cotyledons have been used up, the seedlings clearly tolerate shade less well. The fact that oak invests in the root system relatively strongly compared with other species of trees, also plays a role.” Hazel has a similar strategy. This strategy allows oaks to grow in thorny groves which are dark at ground level, once they have grown above the thorny canopy they are in full sunlight. All that is necessary for oaks to regenerate in this way is the establishment of thorny scrub. This occurs in the absence of grazing => the undulates need to be at a fairly low density, or grazing should be removed from a reserve every once in a while.

Oak seedlings appear unable to grow under a canopy of hornbeam or small-leaved lime. p288. Therefore in some situations even fencing will not guarantee an oak canopy in the future, also they have the other trees to compete with.

Fenced areas to protect from game are not a solution as “ash and field maple will replace the young oak trees within the fenced off areas.” p274.

“All in all, there is a large amount of literature that indicates that the oak is being suppressed, even if the ground is regularly covered with thousands of seedlings” (p280) they never get anywhere.

“Jays take 1-6 acorns on every flight, the largest or longest in their beak, the rest in their gullet. The more acorns a jay carries at a time, the longer the distance it travels to bury them” p302.

When a jay has several acorns it buries them all separately. The distance between two acorns varies from 0.2 – 15m but is generally between 0.5 & 1m. They put them in open areas or hedgerow edges.

Beech regenerates under an oak canopy p194. With low levels of light, beech has a competitive advantage over oak.

“When oak and beech seedlings grow together in the gaps in the canopy of a closed forest the oak initially has a head start over the beech. However, this head start is caught up within a century and the oak disappears as a result of the competition. Even in ungraazed open terrain where the light conditions are the most favourable for oak in comparison with the other species described, oak will not be able to survive because of the capacity of the other species to grow under the oaks and then replace them” p374.

“If this is correct then oaks may even facilitate the establishment of beech, hornbeam and the limes. Why does Vera not mention this?

Hazel

“Hazel should be seen as a species that likes open, unshaded situations. It does not flower and does not regenerate in the shade” p99.

Hazel fails to flower in shade => no nuts and no reproduction.

Probably the best policy to retain hazel in closed forest is to layer and add light.

Nuthatches and nutcrackers take hazel nuts and hide them as jays do with acorns.
**Interpretation of pollen analyses**

Pollen analyses have shown that tree pollen in sediments is dominant... “This makes it plausible to assume that the untouched, prehistoric vegetation was closed forest. However, based on empirical forestry data and data from plant ecology, questions have been raised on the prevailing theory based on the permanent presence of oak and hazel in the prehistoric vegetation. Instead of drawing up a working hypothesis, the data are interpreted based upon the prevailing theory, on the grounds of which plant ecologists and foresters see confirmation of their theory of the closed forest as original vegetation.” p101.

“Correction factors used to modify the representation of various species of tree in the pollen samples are based on the presence of tree species in the forest reserves that are considered to be a modern analogy of the original vegetation. These correction factors are based on an incorrect premise and leads to circular reasoning” p373.

“Pollen spectra from park-like landscapes show great similarities with pollen floras from prehistoric times.”

“Pollen diagrams that are traditionally interpreted as closed forest, could also have been a grazed park-like landscape” p101.

**Succession**

Hawthorn > Ash & Oak > Beech (Watt 1925)

<table>
<thead>
<tr>
<th>Years ago</th>
<th>Now</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Forest</td>
<td>Closed forest with standards</td>
</tr>
<tr>
<td>Grazing</td>
<td>Little regeneration, seedlings not protected by thorny scrub. Forest static.</td>
</tr>
<tr>
<td>Regeneration outside the forest so the position of the forest moves over time.</td>
<td></td>
</tr>
</tbody>
</table>

“The arguments used by plant geographers and ecologists, such as Moss, Tansley & Watt, as well as the palynologist Iverson, from forestry and ecological texts are incorrect, namely, that these show the grazing of livestock was traditionally seen as a threat to the original forest. This interpretation of written sources is purely based on an extrapolation of the results of grazing livestock on a forest and a technique for replacing that type of forest which was only developed in the 18th century.” p188.

“The alternative hypothesis is that the natural vegetation consists of a mosaic of large and small grasslands, scrub, solitary trees and trees growing in groups (groves), in which the indigenous fauna of large herbivores is essential to the regeneration of trees and shrubs that are characteristic in Europe. According to this hypothesis, wood pasture should be seen as the closest modern analogy of this landscape” p370.

**Aging phase** (alterphase) or the breakdown or **dieback phase** (terminal phase). Regeneration should theoretically take place at the start of the above phases. p229.

**Other evidence for Vera’s theory**

“More than 50% of all the species of insects in the whole of Great Britain live in the New Forest alone (20,000 hectares). The new Forest & Wilsor Forest are the richest areas in England. The cause of this is the presence of very old trees in particular (Alexander, 1998).

Of all the European species of butterflies, 80% live in a habitat combining grasslands, scrub & groves with mantle vegetation.” p367.
Bird and lichen diversity is also very high in these habitats

Bison strip off trees ⇒ causes the woodlands to decline ⇒ more grassland for the aurochs and tarpan. By cropping the grass they stimulate the new growth of young grass, with a higher content of soluble carbohydrates and proteins.

The Herb paris situation (seed vectors are now extinct so dispersal is now crap) is evidence that larger animals play an important role in the natural ecology of Europe.

The theory of the cyclical turnover of vegetations

At a certain point in an area there is grassland first, followed by thorny scrub or other unattractive (i.e. inedible) species of plant, then forest (grove) and finally back to grassland. The system is described as a non-linear system. Grazing is dominant in the system. It consists of three modules. Each module is in itself the result of an irreversible development brought about in the system by grazing. The first module is the grassland, where as a result of grazing by specialised grazers, bushes shoot up in which trees can grow protected from being eaten. The grazers cannot stop this formation of forest. On the contrary, they facilitate it by offering buses and trees places to establish themselves, including the oak with the jay as a vector. The second module is the formed grove, in which the bushes, in which the trees grew, disappear as a result of the shade of the canopy. Due to the presence of the large undulates, there is no more regeneration of trees or bushes. A grove arises that only has a canopy storey. The composition of the canopy does not change, because shade-tolerant species do not get the chance to establish themselves below the canopy and penetrate it, because of the large undulates. Light-demanding species in the canopy, such as oak, therefore cannot be replaced by shade-tolerant species. In the groves, the trees in the centre are the oldest, because they established themselves first in the scrub that was present at the time, which subsequently expanded concentrically. The trees become younger towards the edges of the grove, up to the mantle and fringe vegetation that is still in full daylight where the youngest generations are present. Regeneration only takes place there. The composition of species in the grove is therefore determined in the edges of the forest, in the mantle and fringe vegetation outside the forest (grove) where all species of tree grow successfully in full daylight.

The third module is where the canopy in the centre of the grove becomes more and more open, due to the trees decaying through age, possibly in combination with storms, drought and fungal damage, without being replaced by shade-tolerant trees. As a result of increased openness, more light reaches the ground, so that grasslands and herds can establish themselves. The grasses and herbs in turn attract the specialist grazers among the large undulates. Due to the lack of protective bushes, there is no successful establishment of young trees as a result of this grazing. In this way, the grove changes to open grassland over time. Eventually, the surface area of the grassland becomes so large that light-demanding thorny bushes establish themselves there again and young trees can grow in among them. This closes the cycle. At a certain point in time, all the stages of this cycle of succession are present in one place in a large area. Therefore all the biotopes are always present, though not always in the same place. I term this theory about the natural vegetation of Central and Western Europe and the processes responsible for maintaining it: the theory of the cyclical turnover of vegetations.