

NATURAL VALUE AND MANAGEMENT OF HISTORIC PARKS AND GARDENS

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TREES, SHRUBS AND THE WOODLAND BIOTOPE

The woody plants, the old and majestic trees in the first place, contribute hugely to the natural values of parks and gardens. Because of the size of their crown, stem and root system these trees provide an environment where birds, bats, all kinds of invertebrates and mushrooms can thrive. Mainly the old trees include excellent spots where mushrooms, mosses, lichens and tree-dwelling fauna occur on account of their twisted shapes, crevices in the stem and rough bark. Therefore the premier point is to enable the trees to grow to the most venerable age possible. Ancient trees show much more experiencing value than young ones, exactly because of their huge size and quaint shape. In fact, they are irreplaceable. Regrettably the trees are usually felled prematurely, at a much earlier stage of their life.

Many tree species can live on to great age. Oaks (*Quercus*), limes (*Tilia*), sycamores (*Acer pseudoplatanus*), laburnums (*Laburnum*) and yews (*Taxus*) easily reach 300 years of age, many living far longer still. Beeches (*Fagus*), poplars (*Populus*), horsechestnuts (*Aesculus hippocastanum*), and maples (*Acer*) can live up to less than that, but 100 to 200 years can be easily attained. In an old botanic garden in the Netherlands a Maidenhair tree (*Ginkgo biloba*) planted in 1760 and *Laburnuma anagyroides* planted c. 1600 are still very much alive.

It is best to replace the stock of trees on any estate in a gradual way. The result of massive felling and re-planting always leads to disenchantment. Moreover, space for gradual re-planting will usually arise of itself, since over the years some trees fail to make it, creating new room. For reasons of culture history, the historical array of species and the layout of the park must be taken into account when tree species are selected for re-planting.

The undergrowth of trees, park woodlands, shrubbery, wooded banks and hedges can also be of ecological interest. On major estates there will always be spots that are managed less intensely, where woodland species such as *Polygonatum multiflorum*, *Maianthemum bifolia*, *Convallaria majalis*, many ferns, mosses and mushrooms living on dead or decaying wood can be found in one community. A good example is the Ramswoerthe park dating from 1899, laid out in a brook valley, where the extensively managed parts include very fine

stands of *Polygonatum multiflorum*. On the more intensely managed grounds we find *Anthriscus sylvestris*, *Alliaria petiolata*, and *Stachys sylvatica*, species that are easier to satisfy.

A characteristic element of Dutch parks is the so-called stins flora. The word "stins" derives from small castles in the North of that country. The flora we mean consists of usually extravagantly flowering plants that were introduced from other parts of Europe, but have been able to maintain themselves for centuries. Often they grow from bulbs such as *Tulipa sylvestris*, species of *Scilla* and *Crocus*, *Arum italicum*, and *Ornithogalum umbellatum*, *O. nutans*, but also double-crowned *Anemone nemoralis* and *A. ranunculoides*. Stins plants often flower in spring and are much visited by early insect species. Several estates on clay soils in our river area, such as Nijenrode and Vreedenhoff on the Vecht in Utrecht province are famous for their variety of mycorrhiza mushrooms.

Parks on clay soils may lead to a type of woodland allied to the hardwood forests along our major rivers, which is all but extinct in its natural form in the Netherlands. We can still see them at Amelisweerd near Utrecht and Frankendael near Amsterdam. In some cases the management selected consists of 'doing nothing' for financial reasons, but this generally leads to low natural value because many woodland plants depend on light to some extent. In case of too much shadow the relatively heliophilous herb species in the undergrowth disappear, and therefore thinning or coppicing is usually to be advised.

LAWN AND MEADOW

Grassy surfaces often have a supporting role in making the scenery stand out all the more strongly. They afford a resting place for the eye and make solitary trees, flower beds and, of course, the manor or castle itself more conspicuous. But they can also contribute to the ecological value of the park or estate. Around the beds and buildings, the lawn will be clipped very often, thereby restricting the ecological value. The first cut in spring is often delayed somewhat to let stins plants such as *Corydalis solida*, *Galanthus nivalis* and *Scilla bifolia*. These species are important because their pollen, which feeds wild bee species. But in case of strict lawn management only extremely ground-bound plants will be able to flower and seed. Examples of this are the *Bellis perennis*, *Prunella vulgaris* and several species of *Veronica*. The *Veronica* species in particular are visited intensely by a number of flies and bees such as *Colletes*. This bee is specialised in collecting nectar from speedwell flowers.

The lawns farther away from buildings and beds can be transformed into flowering meadows. This greatly increases their ecological value. In a historical frame this is warranted as well, since in many mediaeval and more recent pictures of estates flowering meadows are depicted. They are shown on account of their beautiful flowers, these being the very reason for their presence at the old estates. At present, flowering meadows as an element in parks or at estates are scarce. Regrettably they are not easy to restore. In particular grassland that has not been fertilised (or manured) for a long time span may yield a great array of flowering plants. They attract a host of butterflies and other insects and invertebrates.

Often the lawns at estates and in parks are unnaturally deplete of animal and plant species. When the superabundance of nutrients in the soil is reduced, the natural variety is given a chance to return. The richer in nutrients the soil is, the stronger the competition by only a few strongly growing grasses, and the lower the number of plant species. A grassland rich in species is easiest to attain on sandy soils, on the condition that you do not start with a heritage of many years of fertilisation. If necessary the top sod can be cut and removed in order to reach faster results. The white flowering *Achillea millefolium* can make its own beautiful pattern with various yellow compositae and blue *Campanula rotundifolia*. In case of a clay soil that contains a lot of nutrients on its own account and moreover retains the fertilizer far longer, the reduction of nutrients is less easy. The result may be a hayfield rich in species such as *Chrysanthemum leucanthemum*, *Cichorium intybus* and *Daucus carota*, that makes a fine show in spring, attracting a wealth of butterflies and hoverflies. In more moist positions, especially in the more eastern IJssel area we also find *Gagea* spp. such as *Gagea pratensis*. The De Worp park at Deventer, found in the winter bed of the IJssel river and laid out in 1821 and thus the oldest extant public park in the Netherlands, is a fine example.

LAKES, PONDS AND WATERCOURSES

In many parks and at estates water is an important element in the scenery. Often the quality of the water leaves much to be desired, which usually reflects upon the communities found in it: fish, amphibians, waterbirds and water insects. In particular, species of *Potamogeton*, *Callitriche*, *Nuphar lutea*, *Nymphoides peltatus* or the rare *Luronium natans* may lead to a nice picture as well.

Water plants offer possibilities for invertebrates such as insects and crustaceans. Overhanging branches are suitable watching posts for kingfishers

while hunting fish. The quality of the water can be heavily influenced by local waste dumping, but also by leaves falling from trees or sludge washed in. Often, the water of ponds and watercourses is taken from watercourses outside the park proper. This water is often contaminated and carries fertiliser from agriculture, rainwater surpluses and waste efflux from water purification plants.

Many estates have deliberately been laid out in brook valleys, but sadly a brook with a high water quality is a rare jewel these days. In some cases isolating the water cycle in the park offers a good solution, in particular if groundwater is welling up from below, or rainwater can be retained. If room allows a thought can be given to deposition ponds. If all this is impracticable the best remedy is to ensure a proper water current. Regular extraction of detritus and sludge is advised, but the sludge must be removed to forestall the banks and vegetation from becoming rougher.

BANKS

Nature greatly profits by a correct type of bank vegetation, and also the transition zones from the bank to the water are important. Even in case of water rich in nutrients a wetland type of rough vegetation arises spontaneously, including *Scutellaria galericulata*, *Mentha aquatica*, *Eupatoria cannabinum*, *Lythrum salicaria*, *Valeriana officinalis*, and *Reed (Phragmites)* that make a splendid sight and can be easily maintained by mowing just once a year. These vegetations, but also those dominated by reeds and sedges are of interest to many insect species, but they also afford a nesting place for waterfowl and wetland birds. When clean water wells up from below species of the *Caltha palustris*, *Lotus uliginosus*, *Ajuga reptans* and *Hottonia palustris*.

WALLS AND BUILDINGS

Although walls are not always an integrated part of parks and gardens they can contribute to the natural values. Often garden walls are topped with bricks in soldier courses or lined with bricks on edge and deliberately built ruins and follies may be present as well. A number of plant and moss species are only found on rocks and walls, especially walls where lime mortar was used for binding. Some examples are *Asplenium ruta-muraria*, *Asplenium trichomanes*, *Asplenium adianthum-nigrum*, *Polypodium vulgare* and flowering plants such as *Cymbalaria muralis* and *Pseudofumaria luteum*. In the Netherlands 13 species of wall plant are protected and may therefore not be damaged or removed. In case

of work being done on walls where these plants occur, the authorities must issue a specific permit. Often these wallbound plants occur mixed with other, less specific plants such as *Taraxacum*, *Achillea millefolia*, *Dryopteris filis-mas* and grass species. Mosses and lichens also quickly establish themselves on walls. Wall vegetations can usually do without maintenance but it makes good sense to remove tree and shrub species. Specific wallbound plants possess thin roots and do little damage to the wall. They do however make the best of any irregularity and crack in the masonry work. Where old and monumental walls have to be restored there are now a number of useful methods to spare the vegetation, such as wholesale transplanting of the wall sections carrying the plants.

A wall lining of plants can be ecologically valuable too. In this case the plants such as *Parthenocissus*, *Hedera*, *Clematis* and lots of other ornamental plants root in the soil and use the wall for support. Wall linings are good for many birds and insects. Some owls like to spend the day in the cover of dense ivy cladding.

It is known that ice storehouses and domestic cellars are favourite haunts for bats that are protected in the Netherlands. A cellar can often be made suitable for these nocturnal animals using simple means.

CEMETERIES

Cemeteries can be compared with estates, as far as their vegetation is concerned. Of course the parcels including the graves are specific here. It is however not so well-known that a number of specific, small plants may establish themselves near the headstones when the ground is not cleared too strictly. These include *Erophila verna*, *Arabidopsis thaliana*, *Arenaria serpyllifolia*, *Viola arvensis*, *Lamium amplexicaule*, *Cerastium arvense*, *Veronica* ssp. and the rare *Holosteum umbellatum*. In part these are species that used to occur on traditionally managed arable land but have now become all but extinct. Good examples are the cemeteries in the eastern part of our river landscape, such as Zutphen cemetery. Here we find one of the most important populations of *Holosteum umbellatum* which is a small type of carnation (*Dianthus*) specific to the IJssel river valley.

AVENUES

Avenues in the strict sense only make their appearance in the late 15th and the 16th centuries. Trees planted along roads and canals, hedges, wickerwork and berceaus could be viewed as their precursors. Avenues used to have an economic

importance (on account of the wood) but also protect from wind (oaks, White poplar), from the sun (lime), as architectural ornaments (lime, oak, beech, Hornbeam) and serve to direct traffic, as hunting grounds and playgrounds (lime, elm).

The choice of tree depended on the use it was required for. One of the oldest examples of an avenue laid out especially for the pleasure of town dwellers was the Lange Vijverberg at The Hague where the lime trees and the benches below were already present in 1481 and 'the gentlemen used to sit there on a summer's day, looking at the pleasing sight of the freshly planted lime-trees'. Their successors can still be seen there. The Lange Voorhout at The Hague was laid out in 1536 and planted with limes bought in Antwerp. The Lange Voorhout has also been preserved in all majesty. In March, this avenue is lined with flowering crocuses. It is of interest that as early as 1539 a regulation was found necessary to prevent damage to and felling of these trees.

In the 17th century it had become a well established custom to plan and lay out rows of trees in various towns in the Netherlands. They were found on the town walls and along canals and streets. In this, one species or a mix of several trees was used. The Maliebaan, for example, laid out in 1637, had both elms and limes. Some avenues at De Worp, Deventer, dating from 1821-1825 partially had oaks and limes planted in turns, as a possible reference to Ovid's *Metamorphoses*.

A special type of avenue is called a berceau. Pears (*Pyrus*), limes (*Tilia*) and Hornbeams (*Carpinus betulus*) used to be employed in them. Sometimes they are real small avenues, sometimes they are found as a curio at estates. A very special berceau of cornelian cherry (yellow dogwood) can be seen in the south of Limburg where it blooms bright yellow at the end of February and start of March.

HISTORICAL ARRAY

In general the tree stock at historical parks and estates has gone down considerably. Studies have shown that often less than 10% of the originally planted stands have been preserved! Of course the growth of the individual trees makes some thinning necessary, but it is a pity when the tree stock becomes unbalanced.

The culture history value is not only found in the lines of planting but also in the array of trees used. Historic avenue trees such as limes, elms, White poplars, beeches and oaks are found in many historic clones and varieties. Rune

Bengtsson, a dendrologist working in Sweden discovered that many limes found there had originally been imported from the Netherlands. A large number of clones dating from the 16th, 17th and 18th centuries proved to stem from very able Dutch gardeners who used to export them in large numbers. Not just to Sweden, but to England, northern Germany, the Baltic and Russia as well. There are indications that in West-Vlaanderen there have been excellent gardeners as well at a very early date. They experimented with new hybrids. Sadly it seems that a lot of this knowledge has become lost. In Sweden, gene banks of historic planting material are being set up to preserve this material for the future. Using these, old avenues can be restored in a responsible way, to maintain the typical scenery or to bring it back to life. In our country there is a special lime arboretum near Winterswijk where a number of old lime clones have been planted.

That the restoration of historic avenues is carried out properly is sadly not a matter of course. Often a slapdash mix of cheap plant material is used, which eventually fails to yield the historic picture wanted. Even at the famous Versailles park near Paris the baroque lime avenues are not being restored with common lime (*Tilia cordata*) that would be historically right, but with a sorry lot of varieties that were never used before.

Historic elm clones are hardly used nowadays for fear of Dutch elm disease. The resistant elm clones have an altogether different shape. An interesting idea would be planting historic elms and limes in turn in a row. These species used to be planted in this alternating way, which prevents contagion below ground by root contact, quite often. Of course the indigenous smooth-barked elm (*Ulmus laevis*) that is hardly attacked by elm disease is at our disposal. Smooth-barked elm has become nearly extinct in the Netherlands, but recently it was collected from the wild and has been reared again.

Fine stands of English oak (*Quercus robur*) have been preserved in our country, alongside the old national high streets and canals dating from the first half of the 19th century. A number of these have made the tree races list and are being exploited to yield certified sowing stock.

ECOLOGICAL VALUE OF OLD AVENUES

Old avenues are valuable since they include majestic trees with a great experience value. Moreover old avenues are important on account of culture history and ecology. Venerable and giant trees are often very twisted, causing them to be the preferred nesting place for breeding birds, bats and a whole range of invertebrates. Hollow trees in avenues are sought out by bats as summer

refuges. Owls really like to spend their days snoozing in them. The stems are refuges for particular lichen species. Ancient trees live in a community including specific wood mushrooms and *mycorrhiza* mushrooms that do not occur on young trees, such as various species of *Boletus* spp., *Russula* and *Lactarius* spp. These include many species found on the red list and contribute to a high degree to the biodiversity. In view of the pressure on the environment in the Netherlands it remains to be seen whether the *mycorrhiza*, even in newly planted stands that reaches a certain age, will ever re-establish itself as it was. When avenues are felled wholesale these mushrooms disappear and will not easily re-establish themselves. Old trees are also a haven for wood-dwelling mushrooms. Contrary to what is often thought, most of these species are really harmless for living trees and only attack dead and decaying wood. Some exceptions to this are the parasitic *Fomes fomentarius* and *Meripilus giganteus*, often grows on the stem base and root of beeches after they have been damaged by mowing apparatus.

AVENUE TREE MANAGEMENT

Old, monumental avenues have a particular experience value hard to find elsewhere. Felling of a lime tree avenue dating from the 17th century at Haarlem in the west of the country in 1960 meant the loss, to traffic measures, of the last really old avenue in the Netherlands. At about the same time the beeches in the 'Middachter allee' avenue belonging to Middachten Castle in the middle of the country and dating from the 18th century were felled for the same reason. This was arguably the finest avenue that the Netherlands ever boasted. In Flanders there is still one (lime tree) avenue dating from the 17th century, viz. that at the Abbey of Tongerlo, a very fine avenue indeed. Sadly this avenue is restored from time to time, when old trees die, using completely alien lime clones and even altogether different lime species, which have an entirely 'wrong' look. However, old avenues can be excellently kept up by replacing dead trees with historically right plant material. Rearing from seeds or stock in good time is necessary of course. By adding young trees to the stand of very old ones the cultural history image is kept intact. A total rejuvenation cannot fail to disappoint, and centuries will have to go by before something comparable can be obtained. The loss of ecological value, including that of *mycorrhiza* mushrooms, has already been noted.