

Room for a Small One? Small Trees and Trees in Small Spaces

At NHS Forest we get a lot of queries about small trees. How much space is really needed for trees to establish without damaging adjacent buildings or paved areas? Which species are best suited in a compact space? What can be done for trees already established in the ground? Is it possible to limit the ultimate size of a tree once it is planted? In this guide we will reveal the answers to these questions and more...

Big Tree, Little Tree

Thinking about trees, we instinctively picture larger ones – and with good reason. Mature trees are often the predominant natural features in our landscapes, and some are true giants with the largest ash, beech, lime and oak trees able to exceed 40 metres / 130 feet. At NHS Forest we advocate a principle of ‘the right tree in the right place’. We love tall trees but appreciate that many healthcare settings simply will not have the space available to accommodate larger growing species and may only be able to accommodate a small number of trees overall.

Strategic Planting

Planting trees can have both positive and negative impacts. Yes, they start off small and we know it is easy to get caught up in the excitement of planting – but a little sapling will grow significantly, both upwards and outwards. Using species that may become too big for the available space is a recipe for future issues, requiring time and money to resolve that could have been better assigned elsewhere.

The solution is to plant strategically, giving careful thought to the location and the specific trees you are planting before anyone puts a spade in the ground. Consider whether there are any buildings, paved areas, overhead wires or underground services such as pipes or cables adjacent to the site. Is it likely that a mature tree would cause an obstruction? Is there any doubt about maintaining the trees in 5, 10 or even 50 years’ time?

If the answer to any of these questions is ‘yes’, it may be best to exclude these areas from consideration for planting, or to seek professional advice from an arboriculturist before planting.

How Much Space?

Trees have the potential to cause structural damage so it’s important to consider both the potential height and the extent of the canopy as a mature tree. As a general rule it is a bad idea to plant trees any closer than a distance equivalent to the mature height of the tree from any buildings or infrastructure, and we would suggest an absolute minimum distance from buildings of 5 metres regardless of species.

Tree roots can grow far beyond the width of the canopy (up to three times the height of the tree) but are unlikely to penetrate the foundations of modern buildings and are not strong enough to physically move buildings around by themselves; however the roots of mature trees can cause subsidence and structural damage due to soil shrinkage (particularly in very dry years and for buildings constructed before 1950), block drains or lift paving.

Avoid planting under existing trees as the larger canopies may cast shade and more established root systems will be at an advantage in competition for groundwater, thereby restricting the growth of the younger trees.

10 Trees Under 10 Metres

Carefully considering species is essential in space spaces. Here is NHS Forest's guide to some of the UK's more diminutive native trees, all under 10 metres tall at maturity. (N.B. we've also included a few woody shrubs such as hawthorn and dogwood that are excellent both as for shelter planting and promoting biodiversity).

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| Alder buckthorn (<i>Frangula alnus</i>) Size: 6 metres at maturity Tree bundles: n/a | Thornless with smooth dark brown bark and narrow oval leaves, alder buckthorn is usually found on damp acidic soils and in boglands. Charcoal from this uncommon species was traditionally used to make gunpowder. |
| Blackthorn (<i>Prunus spinosa</i>) Size: 6 – 7 metres at maturity Tree bundles: Nature, Wild Food | A dense shrubby tree with toothed leaves and creamy-coloured flowers and blossoms in bloom from around March. The flowers develop into blue-black fruits called sloes which can be used to flavour gin. |
| Crab apple (<i>Malus sylvestris</i>) Size: 7 – 9 metres at maturity Tree bundles: Urban, Hedge, Wellbeing, Blossom, Wild Food | Britain's native wild apple, this compact often gnarled tree has toothed oval leaves and sweetly scented blossoms. The fruit is often used to make jelly, or is an excellent source of food for wildlife, especially birds. |
| Dogwood (<i>Cornus sanguinea</i>) Size: 10 metres at maturity Tree bundles: Hedge, Nature | A small broadleaf shrub with oval leaves and creamy white flowers that bloom into spring before developing as small black 'dogberries'. Dogwood is noted for autumn colour, its leaves turning crimson before they fall. |
| Elder (<i>Sambucus nigra</i>) Size: 10 metres at maturity Tree bundles: Wild Food | A mid-sized tree with grey-brown bark and feathery toothed leaves. Fragrant creamy flowers emerge from May and develop into small purple berries. Both flowers and berries are edible when cooked. |
| Goat willow (<i>Salix caprea</i>) Size: 6 – 10 metres at maturity Tree bundles: Shelterbelt, Nature | A small, scrub-forming tree with oval leaves and soft pawlike catkins, goat willow is commonly found in damp areas, woodlands and hedgerows. Salicin, the precursor to aspirin, is derived from (and named for) willow bark. |
| Guelder rose (<i>Viburnum opulus</i>) Size: 4 metres at maturity Tree bundles: n/a | Sprawling shrub at home on damp or chalky soils with broad three-lobed leaves and red berries. Common as an ornamental species, the presence of wild guelder rose can be an indicator of ancient woodland. |
| Hazel (<i>Corylus avellana</i>) Size: 10 metres at maturity Tree bundles: Grove, Urban, Hedge, Wellbeing, Blossom, Wild Food | Commonly coppiced for timber, hazel is a mid-sized tree with yellow catkins and small bud-like flowers; when pollinated it will develop oval fruits and ultimately edible hazelnuts enjoyed by humans and small mammals alike. |
| Juniper (<i>Juniperus communis</i>) Size: 10 metres at maturity Tree bundles: n/a | A long-lived conifer with small needle-like leaves, juniper trees can be used to create dense cover for wildlife. Berry-like purple-black female cones are commonly used for flavouring food and to relieve respiratory and digestive problems. |

Spindle (*Euonymus europaeus*)
Size: + 6 metres at maturity
Tree bundles: Hedge

A small flowering tree with colourful autumnal leaves and vibrant pink and orange fruits. Although toxic to humans, spindle has historically been used for medicinal purposes and remains a haven for biodiversity.

A Long-Term Commitment?

Unfortunately it's not possible to stop a living tree from growing. But the good news is that there are practical techniques to limit and reduce the size of trees; even very mature specimens can be gradually reduced to a more practical height over the course of several years, and proactive upkeep of newly planted trees can enable them to be retained at a manageable size indefinitely.

However prevention is better than cure, so we recommend opting for species and spacings that are appropriate for your site at the outset rather than taking on a commitment to regular pruning which may not be sustainable over the lifespan of the trees. The following information should be treated as applicable for extant trees rather than as NHS Forest's recommendations for long-term maintenance of any new trees that we are supplying for planting on healthcare sites.

Pruning to Restrict Tree Size

Selective pruning is the best way to manually control the size of trees, improving their health, shape, and appearance. This method – sometimes called 'crown reduction' – decreases the height and spread of the canopy, increases airflow and sunlight penetration, and reduces susceptibility to wind damage.

For most native deciduous species pruning should be undertaken in the early winter months after the leaves have fallen and the trees are dormant (the main exception to this rule of thumb are species prone to fungal diseases; to reduce the risk of silver leaf it is important to prune productive fruit trees and *Prunus* species such as bird and wild cherry in mid-summer). With the exception of dead branches, trees should never be pruned when they are just starting to produce leaves in the spring.

Pruning can begin as soon as the trees have been planted. Aim to shorten the lateral growth and create a more open form, focusing on diseased or damaged branches. Much like a human haircut, you should aim to leave the tree looking its best with a balanced and even distribution of branches on all sides. Removing lower branches will allow access for mowing, mulching and enjoying the shade of the tree. This is best attempted in stages, evaluating the effect on the aesthetics of the tree. It is prudent to prune a little and often before excessive growth becomes a problem as heavy cutting can put trees under unnecessary stress, particularly if removing more than 25% of the canopy at a time.

Unless a tree is already severely damaged, avoid 'topping' it by indiscriminately removing its upper parent branches. While this may instinctively feel like the most immediate way to restrict the height, indiscriminate heading cuts leaving only the smaller lateral branches creates an unnatural look and can be detrimental to the tree, reducing its sturdiness and increasing vulnerability to pests and diseases.

When removing branches with a diameter exceeding 10 cm or if pruning a tree will require extensive use of ladders, it would be sensible to consider employing a professional arborist.

Pollarding is an intensive method of pruning that may be used to keep trees smaller than they would naturally grow; it is an annual process requiring trees to be recut to maintain their pollarded form. Pruning in this way permanently changes a tree's shape resulting in a distinctive outline with twiggy regrowth radiating from the cut branches and an enlarged 'pollard head'. The technique can be applied

to both young and mature trees but is not suited for all species as some may produce hazardous regrowth that can break off and fall to the ground. Pollarding can be considered where a tree has outgrown its allotted space, retaining a consistent height and span. It can also be used to reduce shading or to create clearance from overhead cables. A professional arborist will be best placed to advise on suitability for specific trees.

Coppicing is another type of pruning where a tree is cut to ground level to facilitate regeneration of new stems from the base, coppicing creates a multi-stemmed shrubby plant without a trunk. It is commonly used in hedging to increase the density of foliage. Maintaining a coppiced tree will require regular recutting and will result in a permanent change to the form of the tree; as such it would be prudent to consult a professional arborist before undertaking coppicing, particularly if the trees are well established.

Growth Regulating Compounds

Growth regulators are products containing synthetic hormones used to influence the development of plants. Specialist formulations for trees are applied to the soil at the base of the stem to be absorbed by the roots. It's important to check concentrations carefully as even very small amounts can have a significant impact – we suggest consulting an arboriculturist if you are unsure.

Using growth regulators will not stop growth entirely and does not eliminate the need for other maintenance – but slowing development for a couple of growing seasons can help newly planted trees to establish, reduce the need for pruning and watering, and could be considered as part of the wider strategy for keeping trees to size in their early years post-planting.

Replacing Felled Trees

While some are long-lived, no tree can live forever and there will be situations where felling becomes necessary because a tree has become a safety hazard or is unsustainable due to its location or condition. If replanting in the same location it will be necessary to remove as many of the roots and other residual material as possible to avoid depleting nitrogen in the soil and may harbour pests and pathogens from the previous tree.

Consider which species will be better suited to the available space (see above for smaller native trees) or whether planting in another location may be more sustainable. Depending on the size of the tree that was felled, the 3-2-1 rule may be used for a recommended number of replacement trees to replant; (at least) 3 replacement trees for a large tree, 2 for medium-sized trees, and 1 for a small tree.

Relocating Mature Trees?

It is possible to transplant established trees of almost any size, but the process is often costly, labour intensive and with no guarantee of success. Trees suffer stress when uprooted and the loss of too many roots in the course of relocation may even kill it outright. Although this could be considered for unique and treasured specimen trees, NHS Forest generally does not recommend this approach.

Thank you for reading to the end, and just a reminder that NHS Forest has fully funded tree bundles available for NHS sites in England. Did you know that we have a tree bundle specifically for healthcare sites with limited space available for planting? The **Urban** mix is our smallest multi-species bundle with thirty smaller trees – 10 x crab apple, 10 x hazel and 10 x rowan – that will tolerate compact soils and thrive in built up areas, whether planted together in a group or dispersed. For more information or to request tree bundles for your site please visit our website ([link](#)).