National Education Nature Park

Shades of trees

Shelter from the sun and rest, staring up into the foliage. Trees will cool down your site and provide a long-term home for many species.

Benefits for nature

Reclaiming a small area of paving to plant one or more trees can have a big impact using only a small footprint of space. Trees offer crucial nesting sites, food sources, and shelter for insects, birds, bats, small mammals, lichens, and mosses. Fallen leaves from deciduous trees in the autumn also support a healthy soil ecosystem.

Benefits for people

Trees absorb carbon dioxide and store carbon, clean the air by trapping particles of pollution, and create oxygen for us and other animals to breathe. They provide natural shade, creating cooler and more comfortable outdoor spaces. Trees also capture and slow rainfall, which reduces runoff and the risk of flooding during heavy rains.

Is it easy to do?

Planting trees is straightforward and low cost. It can easily be adapted to the space you have available. Dig up a small patch of paving or add a large planter on hardstanding. Choose shrubs instead, if trees are too big for your site. Once established, they need minimal care and maintenance.

Where to start?

You can start small by planting a single tree, or aim bigger if you can. Choose the right tree for your site – compact varieties are available for smaller sites. Select a tree that has flowers and fruits to support wildlife. The guidance below helps you to select a tree, choose the best location, plant and look after it.

Cost

£-£££

Season

Winter. The best time of year to plant a tree is in the winter when the roots are dormant and less easily damaged.

Impact for nature

High

Key Vocabulary

Grey spaces Spaces that have no, or very few, plants e.g. playgrounds, paths, car parks, tarmac and asphalt.

Green spaces
Spaces that have some plants already.

Deciduous
Trees that lose their leaves in winter.

Dormant
Temporarily inactive/in a state of rest.

Cultivar
A variety of a plant that has been bred for certain characteristics.

If you think you'd like to enhance your site with **Shades of trees**, the rest of this document will show you how...

National Education Nature Park

Planning and design

In this first phase of the National Education Nature Park, the focus is on creating new spaces for nature in areas that were previously grey, so this document explains how you can create new shades of trees on the greyer parts of your site.

Later on you may wish to plant trees elsewhere on your site, but before you change any existing habitats, you will want to study what is currently living there so you will be able to measure any nature gains you achieve. Guidance on our website for each specific habitat will provide surveys and activities to explore and understand your existing green areas before you start to make changes.

For now, let's turn grey to green...

There are lots of options for tree planting, depending on how much space and budget you have. You could plant a single tree at the edge of your playground, plant a tree line, or even a mixture of species to create a small woodland. If you don't feel you have space for a tree, consider wildlife-friendly shrubs instead.

Tree planting is all about planting the right tree in the right place.

Where should you plant trees?

Planting trees in the ground is far better for their long-term survival than planting in a pot, although you can get very large planters and small tree varieties, if it isn't feasible for you to remove some of the paving on your site.

Think about nearby buildings, drains, cables, pipes or other structures before you plant your trees. The root systems of trees that will grow very large, like oaks, can cause damage if they do not have enough room to spread. Consider smaller species or cultivars if you are concerned about this, as they will have smaller root systems. It is best to check your site services map (if you have one) and seek some professional advice before you commit to a location.

If you are planting more than one tree, space them 2-3m apart so they have enough space to grow (more if they are a species that will grow very large). If possible, allow some natural habitat to grow underneath and around the tree, such as long grass. This will improve connectivity to and from the tree for wildlife such as insects and small mammals.

If planting close to playgrounds or paths, consider whether the tree will drop fruits or leaves that may be messy or problematic to clear up.

National Education Nature Park

What tree species should you plant?

Different trees will suit different sites, depending where you are in the country and what your site is like. You may wish to plant native species suited to the area, or a non-native ornamental variety (but ideally choose one that is good for wildlife). Some trees can grow in lots of conditions, but others prefer certain soil types or moisture levels. To get an idea of what might grow well on your school site, have a look around the local area to see which trees are doing well. You could use the Woodland Trust's tree ID app, or extend the Leaf Identification activity with learners to help identify nearby trees. Your local council may have a tree officer who could help.

Think about these key things to make sure you are choosing trees that will benefit local wildlife the most:

- Try to pick heavily fruiting and flowering trees to provide a range of food sources for birds, small mammals and insects.
- If you have space to plant more than one tree, consider planting a mixture of different species. This will help to provide a variety of habitats and food sources for local wildlife year-round, as different trees provide fruit, nuts and flowers at different times. It will also help to make the area of tree planting more resilient to pests, diseases and impacts from climate.
- If your site is very dry, choose trees that can cope with these conditions to reduce your reliance on watering.
- Have a look around your school, and the land that adjoins it, to see what habitats are already present. Perhaps your tree planting can help connect two existing areas with a habitat corridor: if so, choose species which are similar to those nearby.

Before you choose your trees, think about how much space you have and how big the trees could get. Species like oaks and common beech can grow very big and their canopies can be really wide. If you have limited space or are planting in a planter rather than the ground, choose a species that will stay fairly small and compact. Multi-stem varieties, or ones that grow in a tall thin column shape might work well. Varieties described as 'slow growing' or 'dwarf' varieties will suit large containers. A variety of apple that's grafted to a small rootstock, a cherry tree, or flowering dogwood are good options, or you could consider Japanese maple, snowy mespilus (*Amelanchier lamarckii)* or *Magnolia stellata* too. The RHS website includes pages on trees for containers, and trees for a small garden.

National Education Nature Park

For planting in the ground, The Wildlife Trusts suggest the following native species as a starting point:

- Alder, *Alnus glutinosa*
- Blackthorn, *Prunus spinosa*
- Common Beech, *Fagus sylvatica*
- Common Hawthorn, *Crataegus monogyna*
- Crab Apple, *Malus sylvestris*
- Elder, *Sambucus nigra*
- English Oak, *Quercus robur*
- Field Maple, *Acer campestre*
- Goat Willow, *Salix caprea*
- Hazel, *Corylus avellana*
- Holly, *Ilex aquifolium*
- Rowan, *Sorbus aucuparia*
- Silver Birch, *Betula pendula*
- Wayfaring-tree, *Viburnum lantana*
- Wild Cherry, *Prunus avium*

The Woodland Trust provide a guide to 31 native tree species. It lets you know how large different species can grow, whether they provide autumn or spring colour, and what type of protection they may need when you plant them. It also includes planting guidance at the end.

Once you know what kinds of trees you want to plant, check that you can source them locally, ideally from your area of the UK. This will mean they are already used to the local conditions and reduces the risk of spreading pests and diseases from imported stock. Depending on your budget, and how many trees you are planting, buying ‘whips’ (young, single stem seedlings) can be an economical choice, but you do have to allow them time to grow. If you want more instant impact, choose trees referred to as ‘half standard’ or ‘light standard’ which have already grown to a size of 1.5m or more.

National Education Nature Park

Preparing the ground

Containers

Trees grow best in the ground as they have extensive roots, so if you want to plant in a container, choose one as large as possible. A large, tall raised bed, rather than a traditional plant pot is best. Consider how heavy it will be once planted up – you may not be able to move it so select the location carefully. Most trees will need a soil-based compost, but some prefer acidic soil in which case you'll need to buy an ericaceous (acidic) compost. Ensure the container has good drainage. The container should be at least 45cm across, but ideally much bigger to allow your tree (and its roots) room to grow.

In the ground

You may be able to lift paving slabs yourself but removing concrete or asphalt will require professional help. If you do any of the preparation yourself, be careful of bending and lifting heavy weights – risk assess the activity carefully and bring in professional help if you are unsure. Tree roots spread, so you will need to prepare a large area of soil, removing any rubble and enriching it with topsoil and soil improver. This area must be three times bigger than the root ball (at least 1.2m wide) and at least 0.5m deep, ideally more. The ground underneath paving will be highly compacted, so you'll need to dig and loosen it either with hand tools or machinery.

Ensure you are buying quality soil – topsoil should conform to British Standard BS3882 and subsoil to BS8601. Ensure any soil improver is peat-free so its production hasn't damaged precious peatbogs which are valuable wildlife habitats and carbon stores.

Safety considerations

Heavy lifting

Removing the paving from your site, as well as lifting and moving the plant pot, tree and compost all involve heavy lifting. Risk assess the activity carefully, and bring in professional help if needed.

Digging and tool use

Planting trees requires the use of spades, trowels and/or forks to dig and loosen the soil. Take care when using sharp tools, and risk assess carefully especially if young people are involved in this activity. Ensure you are using appropriate tools for the job.

Sharp branches or spiny trees

Trees can have sharp pointy branches and these can be at eye level, especially when the tree is small. Take care when planting and bear this in mind when choosing the location for your tree. Some species, such as blackthorn, do have sharp spines, so consider this especially if you have very young children in your setting.

Allergies

Birch trees are great for wildlife, but birch pollen is a common allergen. You may want to avoid planting these trees close to buildings, especially in built up areas.

Toxicity

A very small number of trees can be toxic if their leaves, seeds, nuts or berries are eaten– Yew trees in particular. Do not plant yew trees on school grounds. Ensure children know not to eat any part of a tree.

National Education Nature Park

Step-by-step guidance on planting trees

1. When your trees arrive, store them upright and in a sheltered area where they won't be damaged by frost or wind. If you buy a bareroot tree, spray the roots with water to keep them moist, and soak them in a bucket of water for two hours before you are ready to plant. This will stop the roots from drying out and dying before you plant them. If the tree is already in a pot, this wont be necessary.
2. Mark out where you want to plant each tree. You could use stones, canes, string or eco-friendly spray paint.
3. In your prepared ground, dig a hole which is three times bigger than the width of the root ball. Break up the soil around the edges of the hole.
4. Place the tree in the hole and spread the roots. If the tree is over 1.4m tall, add a c.1m long cane or stake next to the tree to provide support, ideally on the side facing the prevailing wind. Consider adding a tree irrigation kit (a tube that funnels water to the bottom of your hole) or tree watering bag to help with watering.
5. Backfill the hole and firm up the soil around the tree. Make sure the soil is filled up to the soil mark on the tree stem, which is where the stem ends and the roots start. Gently wiggle the tree to make sure it is secure, then water it well to settle the soil around the tree.
6. Secure the tree to the cane with hessian ties if needed. Add a plastic-free biodegradable tree guard – a tube or box that goes round the trunk to protect it from being nibbled by rabbits, rats or deer, or damaged by strimmers and lawnmowers whilst it is young.
7. Add bark chippings on the ground around the base of the tree to suppress weeds and retain moisture.

The Wildlife Trusts, Woodland Trust, and Trees for Cities websites all provide guidance on selecting, planting and maintaining trees in the built environment.

National Education Nature Park

Sustainability and maintenance on education sites

Don’t forget about your trees once you have planted them! Think about who can care for them over the school holidays if they are young and need aftercare at this time.

Label your trees

Make sure everyone who helps maintain your school grounds knows where the trees are so they are not accidentally mown over or damaged. You could make or buy some metal tree tags with the species names on and attach them to the trees; this can help young people to learn how to identify trees, as well as draw attention to the new trees and help with long term maintenance as you can easily look up what each tree requires.

Watering

Trees shouldn’t need watering in the long term – you want them to grow deep roots to search for their own water. If you plant the trees in the winter, it will likely be wet enough to not need watering until spring or summer. If you plant your trees when they are active (when they have leaves on), water them daily for the first two weeks, then weekly for the first year. Consider adding a tree irrigation kit when you plant the tree. This is a vertical tube that allows you to pour water deep into the soil rather than watering at the surface. An alternative is a tree watering bag. For container trees, often the overhanging foliage shields the soil from the rain, so trees in pots will require watering year round. Use rainwater from a water butt if you possibly can.

Looking after the soil

Increase moisture retention by putting some wood chip/bark around the base of your tree. Check that the soil is firm around the tree regularly. For trees in containers, remove the top layer of compost each spring and replace it with fresh. Add some slow release fertiliser granules at this time too.

Tree supports

As your tree grows, loosen the ties holding the tree to the cane/stake so they don’t become too tight and bite into the stem. Once the tree has grown a bit and is tough enough that it is safe from being eaten by rabbits, rats or other animals (likely after about three years), you can remove any tree guards.

National Education Nature Park

For more quality-assured learning resources visit
www.educationnaturepark.org.uk

Led by

Natural History Museum

With

RHS

THE ROYAL SOCIETY

Commissioned by

Department for Education

Partners

Learning through Landscapes

Manchester Metropolitan University

NBN Trust
Making data work for nature

Royal Geographical Society with IBG
Advancing geography and geographical learning

UK Centre for Ecology & Hydrology

Working with

esri UK
THE SCIENCE OF WHERE