FRIENDS of PITTVILLE

The life of a tree in Pittville Park

INTRODUCTION

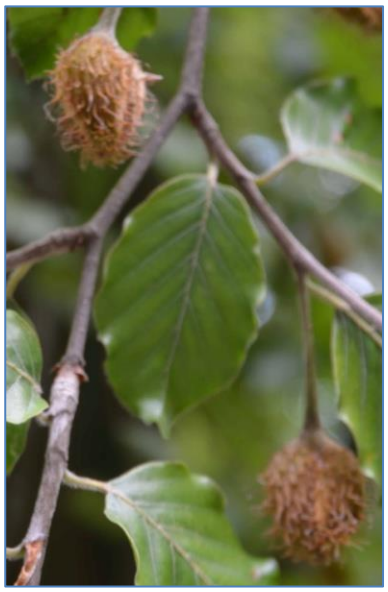
This resource sheet describes the life of a tree in the park: how it starts life, how it lives and what is done with it when it dies. A short walk in the park is suggested to see examples of some of the topics covered.

There are over 1500 trees in Pittville Park, which include a wide range of different tree species. A tree is defined as a perennial plant which can grow a single woody trunk at least six metres high. Trees referred to as native trees are those that were in Britain after the last ice age and before the formation of the English Channel - approximately 8000 years ago - and non-native trees are those that have arrived after this. Examples of native tree species in the park are silver birch, Scots pine, the common oak and yew; there are approximately thirty-three native tree species in Britain. Examples of some common non-native species are sycamore, sweet chestnut, poplar and walnut.

Trees are either called broadleaved trees or conifers. Broadleaved trees, most of which are deciduous, come into leaf every spring and drop their leaves in autumn. Conifers have leaves that are either needles or scales that stay on the tree for several years.

THE START

The primary function of a tree is to grow and reproduce, and trees do this by producing seeds. Conifers produce male and female cones, usually on the same tree, while broadleaved trees produce flowers which become fertilized by pollen. Both coniferous and flowering trees produce pollen, and as trees cannot move, they rely on the wind, insects, birds or animals to play an important role in the fertilization process.



Trees have developed many different ways of spreading their seeds, such as enclosing them in fleshy fruits, nuts, wings, pods or cones/bracts. The beech tree, for example, encloses its seed in a nut which falls to the ground and squirrels will bury these nuts to eat in the winter. Some will not be found and in the spring the beech nut will soak up water from the soil, the shell will split, a tap root will start growing down and a shoot will start growing upwards out of the soil.

Some trees, mainly on the west side of the park, are self-seeded, but many of the new trees in the park are planted as young trees, frequently two metres tall, having been grown in a nursery. These are chosen by the Tree Officer to replace trees that have died or to increase the variety of trees in the park. The Woodland Trust donated native tree saplings (small trees about 60 cm tall) to the park in 2010; these were planted by volunteers and are growing well. Cheltenham Tree Group have also been supplying and planting trees within Pittville for several years.

HOW A TREE GROWS

Leaves make food for the tree using photosynthesis, which is the process whereby sugars are made from water and carbon dioxide with energy from the sun using the green pigment chlorophyll. As part of this process, oxygen is released into the atmosphere. Evergreen needles on conifers carry out the same process but in a more compact form. The branches support the leaves and the reproductive structures.

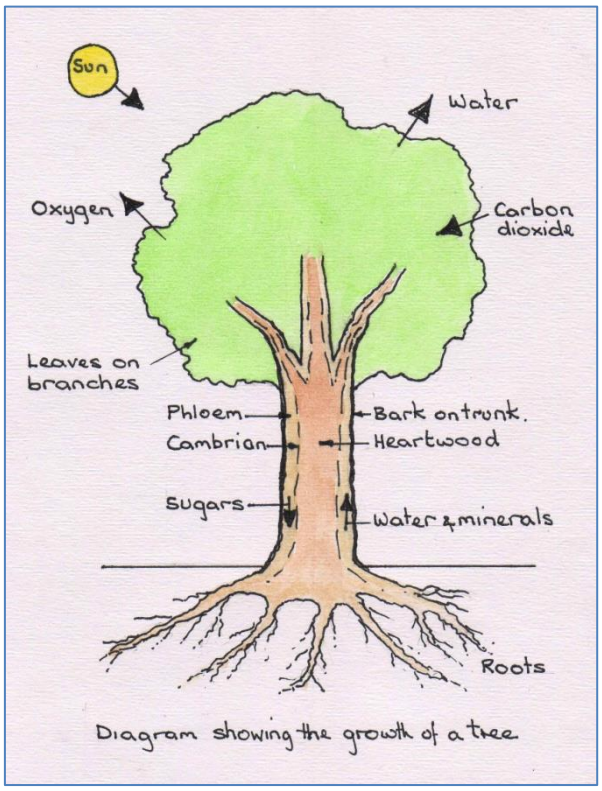


Diagram showing the growth of a tree

The trunk supports the branches and the leaves and gives stability to the tree. The trunk is surrounded by bark which is the hard outer layer that protects the tree. The inner bark, called the phloem, transports the nutrients and sugars made by the leaves to the rest of the tree. Inside the phloem is the cambium, which is the growing layer that widens the tree next to the heartwood.

Roots provide stability to the tree, facilitate the uptake of water and mineral nutrients from the soil and store sugars and starch.

THE SEASONS

Winter - The weather is cold and there is less light and therefore the tree rests. Leaves and flowers for next year, in the form of buds, stay closed.

Spring - The weather starts to warm up and the days start to get longer. Buds open up into new leaves and flowers, and dormant seeds germinate. Hibernating creatures start activity and animal and plant reproduction begins.

Summer - This is the time when the weather is warmest and the days longest. The leaves use the air and the sunlight to make food for the tree, the tree grows and seeds are formed.

Autumn - There is not enough light for the leaves to make food. The leaves change colour and fall off the tree. The green chlorophyll disappears from the leaves, leaving the yellow and orange pigments.

CARE OF THE TREES

Cheltenham Borough Council employ a Tree Officer who inspects every tree in the park at least once every five years, or more often if he/she has concerns about any of them. There is a range of pests and diseases that affects trees. Bacteria and fungi are usually beneficial to woodland; however, a number of the diseases that attack the trees are fungal in origin. They tend to be difficult to spot until fruiting bodies appear, by which time it is too late to help the tree. Some diseases disfigure the tree: the horse chestnut leaf miner causes unsightly brown blotches on the leaves but it does not kill the tree.

Some trees need pruning to remove dead branches or to stop them becoming too top heavy. If the tree is dying, the Tree Officer will decide whether it needs to be cut down for public safety or if the top can be cut off and left to benefit animals in the park.

HOW LONG DOES A TREE LIVE?

All trees die at some time and different tree species live for different lengths of time. There are several things that will influence how long a tree lives; the size of the species and the speed at which it grows, its growing conditions and its exposure to disease are factors. The following give an indication of the age range of some common tree species:

Oak	200 - 900 years
Beech	150 - 220 years
Birch	40 - 80 years
Yew	up to 1000+ years
Scots pine	150 - 300 years
Ash	120 - 200 years
Sycamore	150 - 400 years

Cutting down most conifer trees will kill the tree but the majority of deciduous trees will send up new shoots from the cut stump.

BIODIVERSITY

Trees in parks contribute to biological diversity by providing refuge and nesting sites for small mammals, birds and invertebrates (animals that do not have a backbone such as insects, snails and worms). Trees also provide them with food. For example, tree species that flower and produce fruit are valuable to pollinators in summer and birds in winter.

Dead trees, logs and leaf-litter are important for invertebrates which help recycle rotting vegetation and aerate the soil. Invertebrates are an important food source for small mammals and birds. The dead trees are also important as they provide a home for insects such as solitary bees, wood digesting ants and weevils but also for decay organisms such as fungi and nematodes.

Fungi are associated with trees both alive and dead and are nature's waste recyclers, releasing nutrients from dead tissues and making them available to living plants.

THE WALK

The items in bold are referred to in the text above.

The walk is about 900 metres long and starts at the welcome board near the west end of the underpass in the west side of the park. What you can see on the walk may depend on the **season.**

- Walk along the footpath with the lower lake on your right. On the left is a yew (**a native tree**) and on your right a sycamore (**a non-native tree**). Look out for **self- seeded trees** on the lake bank.

- At the junction with the path that crosses the 'Community Bridge' you will see a **broadleaved** tree, a beech and 2 different **conifers** both with **cones**. Compare the different types of leaves on these trees.
- Turn left and walk along the footpath (with the bark chippings). On your right you will see where a branch has been cut from a sycamore (a **deciduous** tree) and **new shoots** have grown.
- The **young trees** in this area were given to the volunteers in the park by the Woodland Trust in 2010. All have grown well and some are nearly 3 metres tall.
- Notice how much the log lying on the ground to the left has decayed and see if you can see any **invertebrates.** On the right there is a dead tree that the top has been cut off and that is starting to decay at the bottom. There are holes in the tree that may have been used by **solitary bees** and at the top is a hole that might have been made by a **woodpecker** for its nest.
- Walk a little further and you will see a horse chestnut tree with **leaf miner disease.** At the right time of year and conditions you may see fungi in this area.
- Start to walk back towards the bridge and if you are in summer you will see the red **fruits** of the hawthorn and the orange **fruits** of the rowan on your left.
- Once you cross the bridge you will see ahead a group of 4 trees that were **planted by the Tree Officer.**
- Turn right and walk towards the Boathouse and after you pass it on the right there is a holly tree with berries that contain the **seed** that will turn red in the autumn to attract the birds. Holly is a tree species and is either female (with berries in autumn/winter) or male (shedding pollen in spring and with no berries in autumn).
- Just past the holly is a large beech tree that has a lot of **beech nuts** in summer. If you are in a different season you will still see the remains of the nuts on the ground. If you are lucky you will see a squirrel on your walk; there are many in the park.
- Now return to your starting point at the welcome board.