Cambridge University Botanic Garden

Native Tree Trail
KS1 - 3

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Cambridge University Botanic Garden

Lesson Plan: Native Tree Trail

Duration: 45 minutes

Introduction:
During this short tree trail pupils will navigate to eight different sites within the Garden to identify and then learn about eight British tree species. The trees all bear name labels and are sited to be relatively easy to find and identify.

Main Task:
Use the map to identify the start point for the trail and the pictures to help identify leaf shapes. Observe the labels on the trees and see what other information you can find. Take a question and answer approach where possible to elicit information that can be observed.

Navigation:
A ///what3words address is provided for the plants; this is a free app which maps the entire world in 3m squares. You can type the addresses given into the app and click navigate to start your journey to the plant. Different devices have different accuracy levels for GPS, but using ///what3words should narrow down the search area.

For those not using a smartphone, we have also provided a grid reference from our visitor map.

Resources:

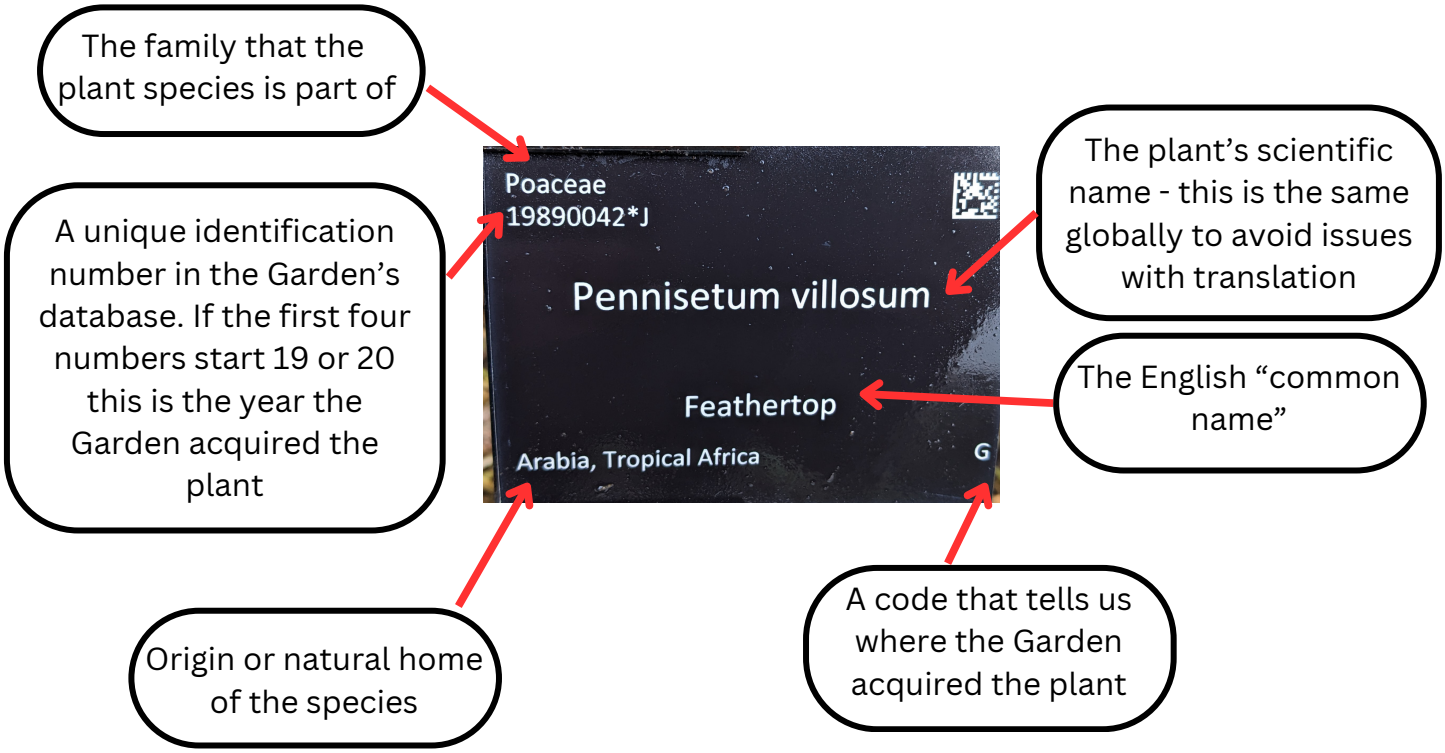
- Map of the site
- Optional: ///what3words app downloaded to a smart device

Remember:

- All pupils under 17 must be accompanied by an adult at all times
- You should be split into groups of 10 or fewer
- The rock garden (F9), stepping stones (D9) and the British wild plants mound (N7) are out of bounds for school groups

Identifying the plants

Plants are labelled in a Botanic Garden. You can check the black labels to identify the plant you are looking at. Here is how to read a plant label:



Hazel *(Corylus avellana)*

Family: Betulaceae

///what3words: needed. dream. clocks

Facts:
The tree can reach 12m high and is one of the earliest flowering trees. If coppiced, hazel can live for several hundred years.

Seed dispersal:
Hazel nuts are dispersed by squirrels and mice.

Bark:
Smooth, grey-brown, which peels with age.

Leaves:
Leaf buds are oval. The leaves are slightly toothed and have a downy underside, making them soft to the touch.

Flowers:
Male and female flowers are found on the same tree, although hazel flowers must be pollinated by pollen from other hazel trees. Hazel flowers provide early pollen as a food for bees. However, bees find it difficult to collect and can only gather it in small loads. This is because the pollen is not sticky and each grain actually repels against another. Hazel is wind pollinated.

Fruit:
The female flowers are a small bud with red filaments sticking out. If pollinated, these buds become the hazel nuts in autumn.

Wildlife:
The hazel supports over 250 different insects as well as birds such as the nightjar, nightingale and yellowhammer. Dormice, squirrels and mice eat the nuts and caterpillars feed on the new leaves.

Did you know?
Hazel is often used as plant supports. Hazel is so bendy it can be tied in a knot without breaking. Hazel has a reputation as a magical tree. A hazel rod is supposed to protect against evil spirits, as well as being used as a wand and for water-divining.







Alder *(Alnus glutinosa)*
Family: Betulaceae
///what3words: deflection.extend.outfit

Facts:
Alder trees can grow to 28m and will live for around 60 years. They are often found in wet, boggy areas.

Seed dispersal:
The small cones open up and release seeds, which are dispersed by wind and water.

Bark:
The bark is dark and gnarly and is often covered in lichen.

Leaves:
The dark green leaves are 3-9cm long and are raquet-shaped.

Flowers:
The male catkins are a wine-red colour during winter. Alder is wind pollinated.

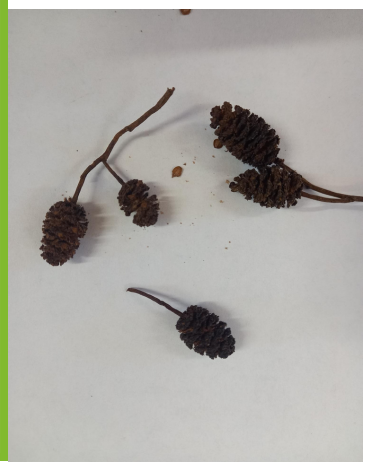
Fruit:
Female catkins become tiny, cone-like fruits in winter.

Wildlife:
Alder is the food plant for the caterpillars of several moths including the alder kitten. Catkins provide nectar and pollen for bees, and the seeds are eaten by birds such as the siskin, goldfinch and redpoll.

Did you know?
Alder has been used to make clogs, boats and sluice gates. It is now used to make pulp and plywood. The wood makes excellent charcoal. A green dye can be made from the flowers which some believe is used by fairies to colour their clothing.







Hawthorn (*Crataegus monogyna)*
Family: Rosaceae
///what3words: wheels.preoccupied.tops

Facts:
Mature trees can reach a height of 15m. They are often grown as a small tree with a single stem and are also used as hedging.

Seed dispersal:
The red fruits are eaten and dispersed by birds such as redwings, fieldfares and thrushes.

Bark:
The bark is brown-grey, knotted and gnarly.

Leaves:
The leaves are around 6cm and are lobed. They turn yellow before falling in autumn.

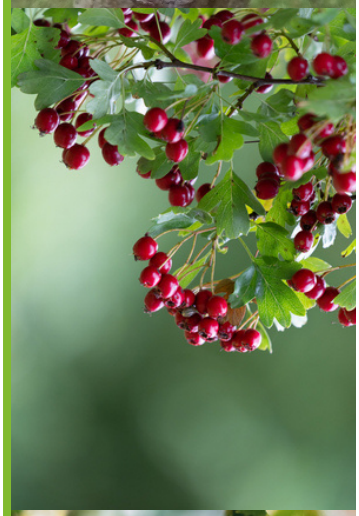
Flowers:
The highly scented flowers(also known as May blossom) are usually white but occasionally pink and have five petals. Hawthorns are pollinated by insects.

Fruit:
The fruit are called ‘haws’. They are red and have just one seed inside.

Wildlife:
Hawthorn supports many species of insect. It is the foodplant for caterpillars of many moths, including the vapourer and small eggar moths. It also makes a good nesting site for birds.

Did you know?
Hawthorn wood is very hard and has a fine grain. It is used to make boxes and boat parts. It burns at a high temperature and so makes good firewood and charcoal. The young leaves, flower buds and young flowers are all edible and were called ‘bread and cheese’. Hawthorn is also known as May tree, whitethorn and thornbush.







Sessile oak *(Quercus petraea)*
Family: Fagaceae
///what3words: jump.people.drop







Facts:
The sessile oak is a deciduous broadleaf tree that can grow 20–40m tall. They can live for up to 1000 years.

Seed dispersal:
The seeds (acorns) are dispersed by animals.

Bark:
This can be scaly and often has deep cracks.

Leaves:
These are dark green and lobed.

Flowers:
Sessile oak has both male and female flowers on the same tree. Male flowers are green catkins and female flowers are inconspicuous and look like red flower buds. They are wind pollinated.

Fruit:
Female flowers develop into an acorn. Young acorns are green, maturing to brown before they fall.

Wildlife:
326 other species are solely dependent on the oak for survival, including purple hairstreak butterflies and the rare oak-mining bee.

Did you know?
Oaks produce one of the hardest timbers on the planet, however it takes up to 150 years before an oak is ready to use in construction. Oaks are linked with royalty; ancient kings and Roman Emperors wore crowns of oak leaves. Tannin from the bark has been used to tan leather since Roman times. Druids practised rituals in oak groves and cherished the mistletoe that grows in oak tree branches. In the 1600s couples were married under ancient oaks.

Ley's whitebeam *(Sorbus leyana)*
Family: Rosaceae
///what3words: year.lower.wounds





Facts:
Ley's whitebeam was only discovered in 1896. It is critically endangered, and only found in the wild in Bannau Brycheiniog, Wales. It grows up to 10m tall.

Seed dispersal:
Whitebeam seeds are eaten and then dispersed by birds.

Bark:
Brown to grey.

Leaves:
The leaves are broadly oval with deep, hawthorn-like lobes. They have a greyish underside .

Flowers:
The creamy-white flowers have five petals and appear in late May and early June.

Fruit:
The berries are wider than they are long and blood red when mature.

Wildlife:
Birds eat the berries of the whitebeam.

Did you know?
Anglo-Saxons were known to have used whitebeam trees as a boundary-marker. The whitebeam is thought to have magical properties and so is used to make wands and staffs.

Scots pine *(Pinus sylvestris)*
Family: Pinaceae
///what3words: loving.good.feels





Facts:
It is one of only three native conifers and our only native pine. It can grow to 35m and can live for 700 years.

Seeds:
It has brown egg-shaped cones in clusters of two to four that point backwards along the stem. The seeds are wind-dispersed, typically travelling up to 175m from their parent tree.

Bark:
It has red-grey scales at first. The papery red-orange bark intensifies with age in the top half of the tree and the lower part grows mauve plates or ridges.

Leaves:
The twisted blue-green needles are found in pairs and are around 4–7cm long.

Flowers:
Scots pine is one of the non flowering plants and so has no flowers. They are wind pollinated.

Fruit:
Scots pine has no fruit but they do have cones. Seeds are found within the cones. There are always cones of different ages on one tree. Mature cones are grey-brown with a raised, circular bump at the centre of each scale. The seeds are dispersed by wind.

Wildlife:
The Scots pine hosts up to 172 different insects including the Scottish wood ant. Birds include the capercaillie and mammals include the pine marten, red squirrel and Scottish wildcat.

Did you know?
In the past it was used for ships' masts, as a source of turpentine, resin and tar, and for charcoal. Today, Scots pine timber is used for building furniture, chipboard, boxes, fences, telegraph poles and paper pulp.

Beech *(Fagus sylvatica)*
Family: Fagaceae
///what3words: actual.mute.parent







Facts:
Mature trees grow to a height of more than 40m.

Seed dispersal:
The seeds (known as beechmasts) are dispersed by animals.

Bark:
The bark is smooth, thin and grey.

Leaves:
Young leaves are lime green with silky hairs. They turn brown in winter. They are 4–9cm long, stalked, oval and pointed at the tip.

Flowers:
Beech has both male and female flowers growing on the same tree. In April and May, the tassel-like male catkins hang from long stalks at the end of twigs, while female flowers grow in pairs, surrounded by a cup. Beeches are wind pollinated.

Fruit:
Bristly husks, containing edible, triangular nuts known as beechmasts.

Wildlife:
Squirrels, mice voles and birds will eat the nuts. Beech supports approximately 64 insect species.

Did you know?
It is believed that the smooth bark of beech trees was used as an early writing tablet. Beechmasts have been eaten by humans throughout history but do contain some toxins and should be heated before eating. Beech timber is suitable for a variety of purposes, including fuel, furniture, cooking utensils, tool handles and sports equipment and was used to smoke herring. The nuts were also once fed to pigs. Beech is associated with femininity and is often considered the queen of British trees, whereas oak is the king.

Silver birch *(Betula pendula)*
Family: Betulaceae
///what3words: salon.recent.dining





Facts:
This airy, deciduous tree can reach 30m.

Seed dispersal:
The numerous seeds are small and wind dispersed.

Bark:
The white bark sheds layers like tissue paper. It has visible lenticels which are raised pores in the stem of a woody plant. These allow gas exchange between the atmosphere and internal tissues.

Leaves:
The leaves are triangular in shape, toothed and the undersides are hairless. They turn yellow in autumn.

Flowers:
Silver birch has both male and female flowers (catkins) on the same tree. The male flowers are around 6cm, browny-yellow and hang in groups of two to four and the female flowers are shorter at 3cm and bright green. They are wind pollinated.

Fruit:
The fruits appear as thick, dark crimson catkins with many thin papery seeds inside.

Wildlife:
Silver birch provides food and habitat for more than 300 insect species, including the caterpillars of many moths. Woodpeckers often nest in the trunk and the seeds are eaten by siskins, greenfinches and redpolls.

Did you know?
Birch wood is used for the production of furniture and toys, and was once used for the production of bobbins, spools and reels for the cotton industry. It is also still used to make brushes for sweeping the garden. The sweetener, xylitol, is made from silver birch trees and it is extremely toxic to dogs.