

Tree Walk Rothamsted Park



Harpendenscouts.org.uk
serving Harpenden, Wheathampstead and Kimpton

**Leader
Resource**

The Oak is likely to win

An activity trialed with the 3rd Harpenden Troop. Rothamsted 30th June 2014+

Leaving the 3rd HQ and crossing the road over to the common via the Scots Pine and Larch trees and then arrive at the Baa Lamb trees, Oak, Maple and Beech. These well-known trees, according to the History Society's research (and speculation) are growing on land once belonging to a family named Balaam who built a house here, known in the area as Balaam's house, but the family also had a farm in Redbourn which became their preferred home. Over time, Balaam's house fell to dereliction, its timbers were plundered and soon the entire ground became overgrown with brambles. This introduces the main idea of the tree walk which is the way our forests regenerate. Into the safety of the brambles where animals cannot feed on saplings, trees can get started. Several trees did become established here and in time, so that sheep could graze the Common, local people cleared Balaam's site of brambles and remnants of the house but

left the growing trees. These became known as the Baa Lamb trees through a simple corruption of the original name but perhaps also because sheep had grazed there. The Baa Lamb trees have stood for many years gaining the affection of all and establishing a Harpenden landmark.

[Cross the road]

Near to the Fire Station is an Indian Bean Tree, a native of south-east USA, obvious with its large floppy leaves and long bean pods in the autumn. I have seen three in Harpenden but very few on travels beyond.



Looking north beyond an aging Horse Chestnut is the line of Beech (in front of the British Legion) that were planted 1965 to replace a majestic stand of old Elm trees that were killed by Dutch Elm disease. Harpenden had impressive elms on its greens and notably along the High Street. They were old, massive and striking features in the town's landscape. All fell to Dutch Elm disease within a decade. The look of Harpenden must have been devastated: what was green, historic, friendly and defined the spaces became a stark, uninterrupted view of road and buildings. 40 years on we



Oak



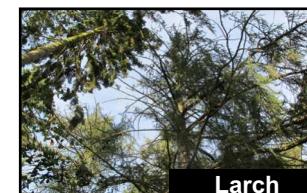
Maple



Indian Bean



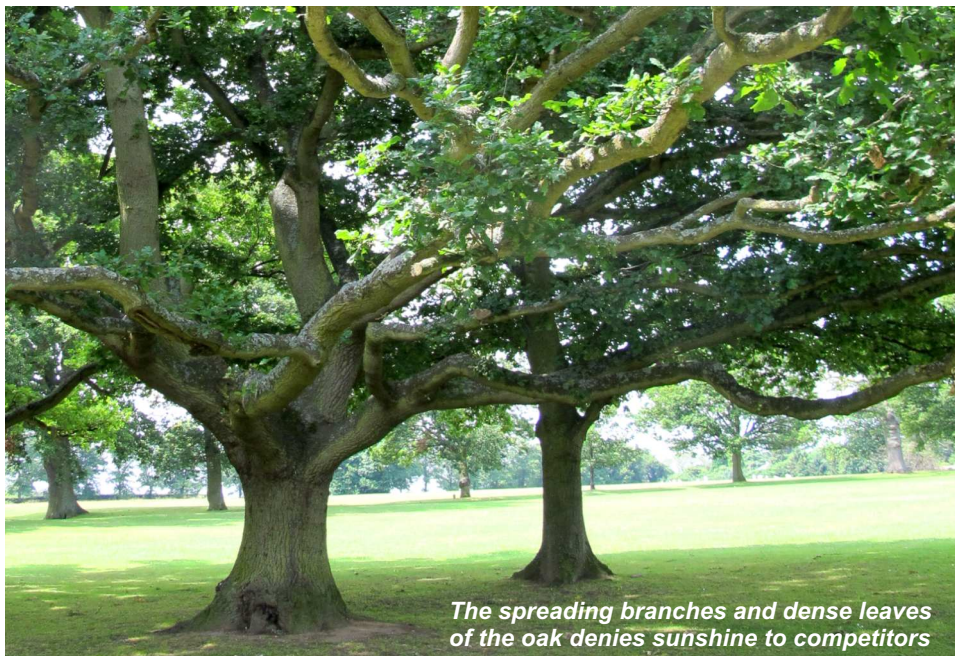
Beech



Larch



Scots Pine

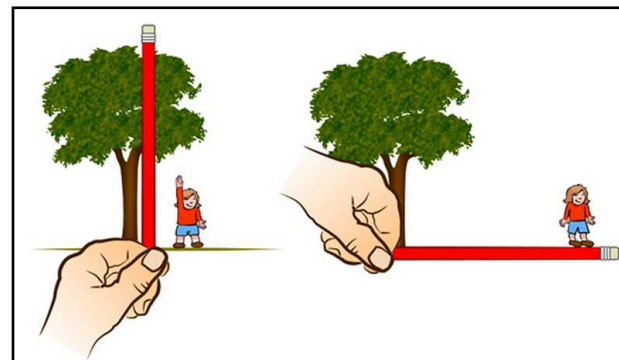


lime trees had the power to heal anxiety and even epilepsy just by sitting under the tree.

[Ask scouts to find a twig as long as their forearm]

Walk up the avenue and then out on to the open park to the right. Gather around for a demonstration of how to estimate the height of a tree.

Stand in front of a tree at a little distance. With arm straight out at shoulder height, hold the twig vertically and sight through it so the top of the twig is in line with the top of the tree and the thumbnail is in line with the bottom of the tree. Adjust as necessary. Rotate the twig 90 degrees keeping the thumbnail at the bottom of the tree. The top of the twig now marks the spot where the tip of the tree would be if it fell over. Ask your partner scout to stand at this spot (use hand signals to move right or left) and then pace the distance between the marker scout and the bottom of the tree. This is the height of the tree, in paces.



Measuring the pace. Take a rope (a length of blue 6mm polypropylene is ideal) and mark each metre interval with coloured tape (e.g. electrical insulation tape). Lay this out on the grass, tight between pegs, and

invite all scouts to walk the line and learn either how to pace metre steps or learn how many natural steps to, say, 10 metres.

Invite scouts to pair off, choose any of the tallest lime trees (they are all close

see Harpenden's treescape renewing. Maple, plane, lime, chestnut and beech are now maturing and re-establishing the look of old Harpenden.

[Enter Rothamsted Park]

Stop at the gate and look up the avenue of Limes. They were planted by Sir John Lawes around 1880 to create a private road up to his manor house. So the lime trees are about 130 years old but they may yet reach 500 years. Lime is a native of Britain. The Romans called it the tree of a thousand uses, the fine timber being only part of its versatility. The bark yields a strong fibre for ropes and fabrics, the blossom feeds bees for honey and makes a refreshing tea, the roots improve the soil, in springtime the trees scent the air and the sap flavoured wine. When pollarded, lime grows strong straight poles for many uses. By royal decree lime trees were planted in towns so that its fruit and timber were in plentiful supply. English folk lore imagined



Horse chestnut



Plane



Lime



Whitebeam



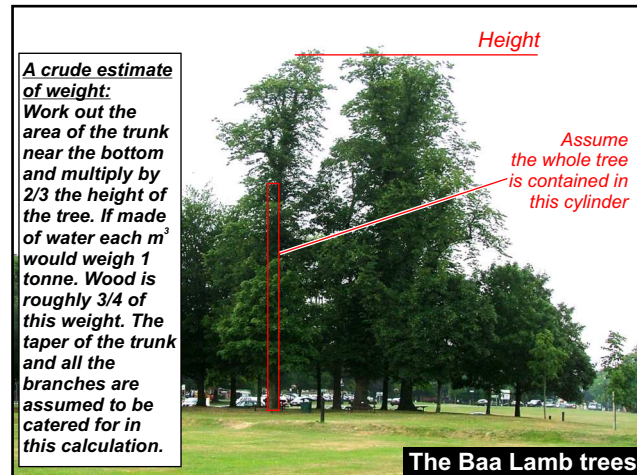
Hornbeam



Black poplar

in height) and come back with their estimate of height. Trevor Lilley (SL) and I teamed up and made a typical lime tree 29 metres.

Just for interest, we can derive a crude estimate of



the weight of a tree by standing at the tree and estimating the radius at head height. A4 paper for instance is about 300 mm long and is a useful mental reference of this distance. Ditto a standard desk ruler. Make a judgement of radius and then find the area using πr^2 . Round off the numbers to make mental sums easier. Multiply the area by 2/3 the tree height and this is roughly the tree's volume including trunk, branches, twigs and leaves. If the tree was made of water there would be one tonne for each cubic metre but wood floats and so is a lighter, say, 3/4 of a tonne per cubic metre.

The trunk of the tree that is 29 metres high is estimated to have a radius of 1/2 metre and so its area is $\frac{1}{2} \times \frac{1}{2} \times 3 = \frac{3}{4}$. 2/3 the height is roughly 20 metres and so the volume = $\frac{3}{4} \times 20 = 15$ cubic metres. The weight is 3/4 tonne per metre and so $\frac{3}{4} \times 15 =$ about 12 tonne.

The estimate is not accurate but it is indicative. It is derived from a twig, the memory of a sheet of A4 paper and simple math. It is a scout skill and transfers to many situations far beyond trees.

[Gather around: a good time to discuss CO²]

Trees grow year on year by taking atmospheric CO² into their leaves where in the chemistry of chlorophyll it is clobbered by sunlight to smash open the bonds between the carbon and oxygen. The separated carbon is transported away to make wood (and all the needs of the tree) and the unwanted oxygen is released to the atmosphere. The animal kingdom depends on the oxygen from this process (called photosynthesis) but, of course, trees are not alone in creating oxygen grass, nettles, shrubs and, even more important, many marine plants and creatures also photosynthesise and release oxygen. Even so, trees are a contributor to the planet's oxygen.

The only time a tree takes in CO² and holds it is when it is growing, that is, when it is adding weight. When the tree stops growing because of disease, drought or felling, CO² capture stops. In death, the wood decays through the action of fungus and bacteria and all the carbon is reconnected with oxygen and returned back to the atmosphere as CO². The same occurs if we burn the wood as fuel: the heat generated is the recombination of the carbon with oxygen and CO² goes up the chimney. Burning or decaying trees is, over centuries, CO² neutral. CO² is separated and then recombined and so is, in the end, unchanged. Every new tree that grows collects and locks CO² in its timber. Since many live for hundreds of years, they each hold many tonnes of CO² for a slice of history.



[Move up to the fallen Whitebeam]

During the storm of 1987 that ravaged the south of England, 8 million trees were blown down. Among them was this Whitebeam, then a newly planted sapling. Ordinarily, the tree would have been righted or replaced by the park wardens but they had enough on their hands managing the hazards and clearance of fallen trees throughout the area and so the whitebeam got forgotten. It thrived laying down. But notice how the tree has assumed its proper vertical shape even though its trunk fell on the grass. This is a super illustration of the way branches are controlled to grow upward, correct to their genetic form; it is the effect of tree hormones and sunlight.

[Go north over to the Hornbeam and Black Poplar next to the rough]

The hornbeam is not related to the whitebeam. Beam is the old English name for a tree (any tree) and hornbeam is so named because the wood is as hard as horn. (In America the same tree is

known as ironwood). The whitebeam is so called because in spring the leaves are practically white. The toughness and density of hornbeam makes it the tree with the hottest fire when burnt. For this reason, hornbeam was planted widely during the early industrial revolution for its charcoal and it is why hornbeam is a common tree today. Its wood is so hard it is difficult to craft but it was used extensively for the teeth in mill wheel cogs and yokes for oxen.

The Black Poplar next to the hornbeam has rather pale leaves. It is called black only because its bark can become quite dark (blackish) but this black poplar shows no sign of living up to its name.

[Follow the path around to the north, into the thicket of the rough]

On the right we come to a small gap that falls away to the hollow of the rough. Here brambles and grasses forbid entry but we can see into the tangle of undergrowth. Because neither mower or grazing animal enter here, the ground is left to grow wild as it will. Pioneer trees such as Holly and Ash have been able to get a hold. Normally brambles deny other plants their ration of sunshine and so little can grow under them; but some tree seeds have enough food and energy for about 2 years. This can be sufficient to grow tall enough to poke their top two leaves through the bramble and survive. Of course, they not only survive, but use the sunshine to grow taller and establish a canopy of leaves which out-competes the bramble. The pioneer trees abound in the rough; ash is particularly abundant because of the nearby mature ash trees. In time, the shade of

pioneer trees overcome the brambles.

[Follow the path around to the bottom. Stand by the concrete structure]

In the midst of the thicket there is an old fallen trunk that has been there for years. (It's not easy to see). Look at the state of decay. As it gets eaten away the wood is converted back to CO². It will need to rot for a few more years for the tree to vanish.

[Follow the path around the rough]

Cut through the long grass, up a slight gradient to the cluster of trees (whitebeam, maple and hawthorn). *Gather around.* At our feet, in the space between and close to the trees, we see a



dozen oak saplings all about a foot high. About 100metres to the North there is an isolated stand of mature oak trees and it is highly probable that squirrels have collected its acorns and buried

them here in the cover of these trees. The tree cluster gives them cover and signposts where their winter food is buried.

[Walk over to the mature oaks]

Stand under the biggest oak. Notice the grass beneath can barely grow because little sunlight penetrates the canopy. Look at the enormous spread of its branches. Imagine that the oak saplings we saw next to the whitebeam and maple grow to be as this oak we stand under. It is clear which tree will ultimately prevail: the oak will rise, spread, deprive its neighbours of sunshine and dominate the space. The oak tree is king of the forest and if Rothamsted Park were left to an unmanaged future, it would, in time, become mostly a forest of oak, and all the smaller, lighter trees would survive only at the edges. The oak would probably dominate this landscape.

That's it. Thank you all for listening. Let's hurry back to the HQ for flag-down.

RV July 2014

