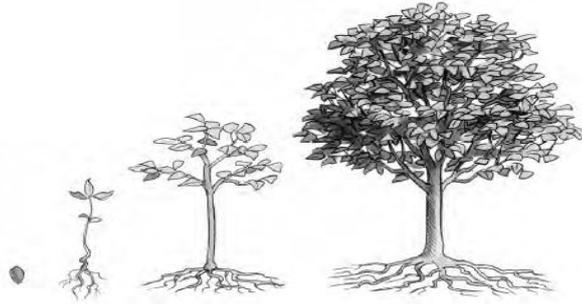


Education at Hillworth Park – Science

Exploring Trees - The Age of Trees

Outline

This exercise looks at two different methods for calculating the age of mature trees. It can be undertaken at any time of the year and forms part of the wider 'exploring trees' material.



Aims

1. Children will gain an appreciation that there are different methodologies available to reach the same conclusion but that some are more accurate than others.
2. Understand that trees are long living organisms and that their growth is dependent upon climatic conditions.
3. Undertake some basic mathematics.

Link to National Curriculum

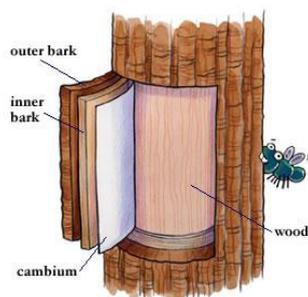
Key Stage 1: Sc1a, Sc1b, SC1d, Sc1e, Sc1f, Sc1g, Sc2c.

Resources needed:

Tape measure, paper, pencils, site plan (separate download) for the location of the oak and beech stump.

How Old?

Annual rings (tree rings, growth rings) are a very accurate way of determining the age of a tree. The process of aging a tree by this method is called dendrochronology and involves boring into a living tree to take a core sample. Fortunately we have a good sized tree stump – the beech stump – which we can use for the same purpose. There is also a method for estimating the age of trees based on their circumference but this is very much the poorer method.



Annual rings are produced as the tree grows – normally one year equals one growth ring – with new growth occurring adjacent to the bark. The cambium layer is responsible for the new growth with cells splitting to form new sap wood. As the tree grows the older sapwood becomes heartwood which is much denser and eventually dies causing hollowed out trunks. Annual rings can be affected by weather with very little growth in years of drought.



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Exercise

Split into two groups. One group will count the annual rings on the beech stump whilst the other will estimate the age of the giant oak. When each group has finished then they can swap over.

To estimate the age of the oak measure the circumference at 1.5m from ground level (or as near as possible to that height) and divide the measurement by 2.5; for example if the circumference is 250cm then the tree is 100 years old).

Record the ages of the two trees. How old was the beech when it was felled and how does this compare to the oak? You could also do a comparison between the two methods – assume the beech tree had a circumference of 350cm when it was felled – how accurate is this method compared to counting the rings?

The giant oak can also be used to make a crown map which shows the extent of the area covered by the tree. Get the children to stand in a circle around the tree directly under the furthest extent of the canopy. If the ground is dry they could lie down (head to toe) and look up to do this. Get others to measure out from the trunk to capture many measurements. The circumference could be plotted on a scale plan back at school.

Get the children to imagine that the tree is turned upside down and explain that there will be a similar extent of roots now in the air.

Ask the group to think about their ages and compare to that of the trees. How many times longer have the oak and beech trees been living?

Key words: growth rings, annual rings, bark, sapwood, heartwood, cambium layer, circumference

N.B. The oak has been estimated to be between 350 and 500 years old based on its size; no dendrochronology has been undertaken on it so no definitive answer can be given.

We also have available a set of 'slices' taken from various trees that can also be used to count growth rings. Please ask if you would like to use these.

Some important health and safety issues:

Don't stand under a tree when there is a high wind.

If you see any 'hanging' branches stay clear and please inform a member of staff.

Beware of other park users particularly cyclists coming through - keep the main paths clear.

Make sure everyone washes their hands before handling food.

We ensure that the park is kept clean but if we have missed something please let us know.

Toilets, drinking water and first aid kits are available at the Park Centre and office.