

# Hello Trees Resource Sheet



## What to look for outdoors in winter Oak buds, shoots, leaves and flowers



Twig of an oak tree



Have a magnifying glass with you.  
We are going to look at oak twigs.

Here is a photograph of an oak twig.



The **girdle scar** marks the beginning of last year's growth.



The bud at the tip is called the **terminal** (end) or **apical** (at the apex) bud.

Growth from this bud makes the tree taller – or the branch longer.



Side buds are called **lateral** (side) or **axillary** (at the axils of leaves) buds.

You can clearly see a scar where a leaf was below one of the axillary buds: the bud was in the axil of the leaf that has left the scar.



I can count 9 axillary buds in the photo.  
Can you?

- Each tiny bud is a squashed-up new shoot. It is very squashed-up!
- At the centre, inside the bud, is a tiny stem with leaves wrapped round it in layers.

- In some buds, catkins are wrapped up inside the leaves.
- The layers of leaves are like scales. The outer scales are toughened to protect the others inside. Can you see the scales on the outside of the bud?
- The leaves and catkins inside are crinkled from being folded and squashed.
- At the end of the stem is either a new terminal bud or a female flower bud.
- In spring, buds burst and their inner stems get longer.
- As the stem extends, it spaces out any catkins and then the leaves.
- Catkins get longer and leaves unfurl into the light.



The new extended stem is called a **shoot**.

At the end of each new shoot will either be a new apical bud or a female flower.



Phew! Got all that? Formed a picture in your mind of what is inside a bud?

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That do you think the new leaves and catkins and female flowers will look like?

You can wait until spring, April usually, to find out for yourself.

Or you might like to look at Hello Trees resource sheet 'Oak tree catkins and female flowers'.

For the whole seasonal life cycle of an oak tree see Hello Trees book 'Olly Oak'.



I have an interesting thought for you: every twig on a tree, with its apical bud extending its growth and its axillary buds forming new branchlets, is a miniature version of the tree itself.

Small twigs grow from larger twigs just as the larger twigs grew from the branches and the branches grew from the trunk.



**The structure of an adult tree reflects the way it has grown each year, shoot by shoot throughout its life.**

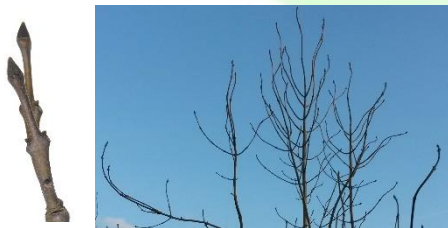


Have a look at ash tree buds and ash tree branching.  
And then look again at oak tree buds and branching.

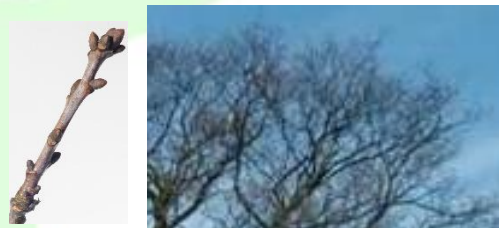
Oak tree shoots have many buds close together and on every side of the stem.

Ash tree shoots have buds opposite each other and more widely spread out.

See how different the structure of ash trees and oak trees are from each other – all because of the different position of the buds on their twigs.



*Ash tree twig and ash tree branching*



*Oak tree twig and oak tree branching*

You might like to design your own oak tree.

You can do it with paper and pencil. See 'Tree growth: design your own oak tree'

Or you might like to do it using Lego. See 'Understanding tree growth using Lego'.

Let us know how you get on. Post what you have done on the Hello Trees Facebook page.



It is fun to make a note of what you saw today and what you might look for and do next.



For more about trees, fun things to look for and do indoors and outdoors, and about Hello Trees books see Hello Trees website at <http://hellotrees.co.uk/>