

Hello Trees Resource Sheet

What to look for outdoors in Spring

How and why of leaf colour in Spring



Have a magnifying glass with you.

We are going to go what I call 'bronze prospecting'.



Here are oak leaves when they first come out. They are yellow-green.



And here is a twig that fell off an oak tree soon after the leaves came out.



See the pink-red-brown colour in the leaves?

I shall call the colour 'bronze'.



I wonder why the leaves are bronze at this stage.



In summer, oak leaves are deep green.



I wonder why oak leaves change colour again.



In summer, we see the leaves as deep green because the leaves are full of chlorophyll.



Chlorophyll is a substance that captures energy from light.

It looks green to us: 'chloro' is green, and 'phyll' is leaf.



Last autumn, any remaining chlorophyll in the leaves was broken down into its elements and taken back into the main body of the tree to be stored safely.



That is why the leaves are not deep green when they first come out of the bud: they don't have any chlorophyll in them – yet.



A lot of different creatures - from caterpillars to deer - like to eat the leaves of trees.

They like tender young leaves best¹ so it is better for the tree to delay filling the leaves with precious chlorophyll until the leaves are fully expanded and tough.



Substances called **anthocyanins** are found in the new leaves soon after they come out.

It is the anthocyanins that give the leaves their bronze colour.



Could anthocyanins be protecting the leaves in some way?

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Scientists are still doing research to find out how the anthocyanins help the tree.

Here are some of the ideas they are exploring:

1. Some creatures don't see red clearly. They might see the leaves as dark or dead.
2. The pigments might protect the tender new leaves from being damaged by light.
3. Creatures might not like the bitter taste of the pigments.



Action at last!



Take your magnifying glass with you and go hunting for new leaves.

See whether you can spot any patches of bronze on those new leaves.



Clue: anthocyanins need light to develop. Look for it on the top outside of leaves.

Let us know how you get on.

Here are some shades of bronze that I found in young leaves.



Young oak leaf



Young sycamore leaf



Young poplar leaf



Young mountain ash leaf

For more about leaf colour see Hello Trees resource sheet on the Science of Autumn Colour

<http://hellotrees.co.uk/wp-content/uploads/2015/11/autumn-science-of-autumn-colour.pdf>.



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/>

¹ '[Trees] typically receive 60-80% of their herbivory when young'

Thomas, Peter A; Trees: Their Natural History, Second Edition; CUP; 2014.