



TREES VS. SHRUBS

What makes trees and shrubs different from other plants?

Trees and shrubs are types of **woody plants**, so called because they contain a tough substance called 'wood'. Each year they grow bigger, producing new leaves and shoots on old stems. They are different from **herbaceous plants** which die back in winter and have to grow from the ground up every year from a seed or from the root system.

ACTIVITY ONE SCAVENGER HUNT

Time for a walk or to have a look out of your window – or both! **Take this sheet with you to help.**



CITY PARK



BACKYARD



WINDOW

Have a look at the plants around you and check the boxes when you find a:

- ☐ **Shrub (bush):** this is a woody plant that has more than one stem and is smaller than a tree when fully grown. Feel the stem – it should be hard and tough. Check the twigs – does it look like they grew over a number of years?
- ☐ **Tree:** this is a woody plant that usually has one stem and is over 6 meters tall when fully grown.

Woody plants can be divided into evergreen and deciduous species. Check the boxes when you find a/an:

- ☐ **Deciduous Plant:** this is a plant that loses its leaves in fall. It does this to conserve water during the winter months. Without leaves it cannot make food for itself through photosynthesis, and it goes dormant until spring.
- ☐ **Evergreen Plant:** this is a plant that has leaves throughout the year. Often, it has small leaves like needles with a coating of wax to conserve water. It is not as efficient at photosynthesizing as a deciduous plant, but doesn't have to shut down completely in winter.

In summer it will be hard to tell the difference as both deciduous and evergreen plants have leaves – try and think back to winter. Did this tree or shrub have leaves then?

Woody plants can also be divided into flowering and coniferous species. Check the boxes when you find a:

- ☐ **Flowering Tree/Shrub:** These produce flowers – though the ‘flowers’ don’t always look like the flowers we are used to! Some flowers have no petals and are clustered in together to make a soft fuzzy catkin (like on a pussywillow), a long drooping catkin (like on an aspen or balsam poplar), or others (like those on silverberry) that are tiny and easily overlooked. If it is late summer or fall, look for ‘fruit’ instead. Fruits can be fat and juicy like a berry but can also take lots of other forms like ash keys, dandelion fluff, or tickseed. In **botany** (plant science), these are all forms of fruit! Most flowering trees or shrubs are deciduous with broad leaves. However, some are evergreen like bearberry (also called kinnickinnick).



PUSSYWILLOW
CATKINS

- ☐ **Conifer:** These do not produce flowers or fruit. Instead, they produce male and female cones. The male cones produce pollen and the female cones produce seeds. If you find a cone, pull the scales apart and see if you can find a seed. Most of these species have needle-like leaves, like spruce trees, or scale-like leaves, like juniper, and are evergreens. But there are deciduous conifers such as larches that lose their needle-like leaves in fall.



MALE
CONE

FEMALE
CONE

ACTIVITY TWO TEA TIME

Make your own tea from an evergreen conifer:

- Find a spruce, fir, or pine tree. Spruce needles are short and spiky, firs needles are flat and soft, and pine needles are longer and grow in clusters of 2 to 5.
- Pick about ½ cup of fresh needles from near the tip of the twigs.
- Wash the needles, then chop them up.
- Put the chopped needles in a cup and pour boiling water over them.
- Allow to sit for 10 to 15 minutes.
- Add a spoonful of honey and a splash of lime. Enjoy!



**DID YOU KNOW
TREES CAN
COMMUNICATE
WITH EACH OTHER?**



TREE FACT

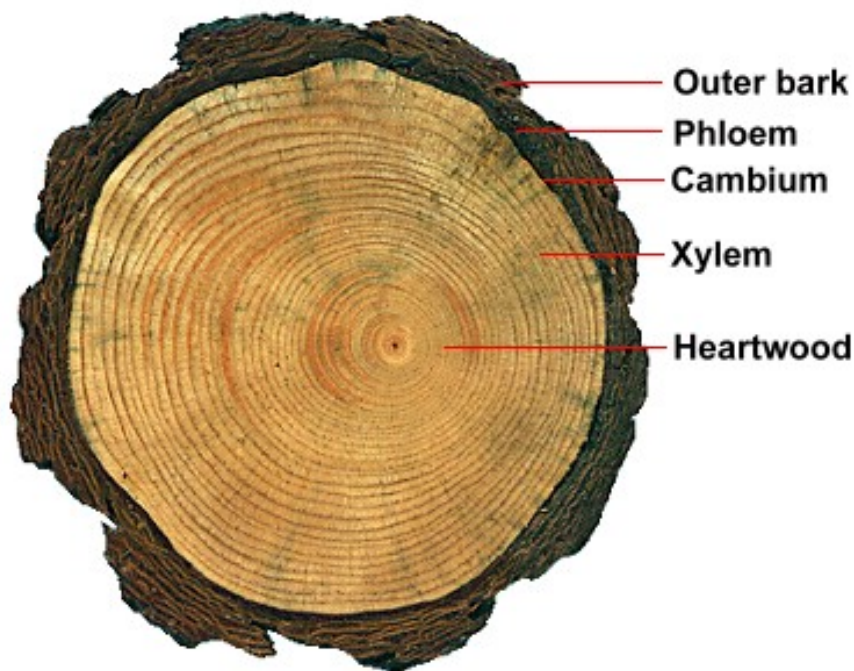
Just because trees don't have mouths or ears doesn't mean that they can't communicate with each other. Trees use **pheromones** (chemical signals) to send each other messages.

For example, if an ant starts munching on the leaves of one tree, it will release chemicals into the air to send out a stress signal. The other trees around it read the message, and begin to produce a chemical to change the flavour of their leaves so that the ants won't want to eat them!

ACTIVITY THREE TREE RINGS

How do woody species grow and develop?

Every year branches add new growth at their ends and the trunk and stems gets thicker. If you cut a tree down, the inside looks like this:



LAYERS OF A TREE

Outer bark: Made of dead cells that are waterproof. It protects the inner layers from weather and extreme temperature.

Phloem: Pronounced *FLOW-UM*. Also called the inner bark and is a living cell layer. It transports sugars made through photosynthesis from leaves (and sometimes stems) to the rest of the plant.

Cambium: the growing layer

Xylem: Pronounced *ZY-LUM*. Also called 'sapwood'. The xylem transports water and nutrients from the roots to the rest of the tree. As water evaporates from the leaves (transpiration), the xylem brings more water up from the roots.

Heartwood: The inner layer of the tree trunk is made out of thicker and darker coloured wood than the xylem layers. This is the core of a woody stem. It is made of old dead xylem cells

The **cambium** is where new cells are made, between the **phloem** and **xylem**. New phloem cells develop from the outside layer of the cambium and new xylem cells from the inside layer. It is because of this growth that trunks, branches, and roots get thicker every year.

Can you tell how old the tree is in the picture above?

As new xylem grows it forms different coloured rings. In the summer, the tree or shrub is growing fast and the cells are larger and lighter in colour. In the winter, growth slows down and cells are smaller and darker. This results in rings of dark and light growth. Each dark/light ring signifies a one year of growth - so **how old is it?**

The tree is _____ years old.



DID YOU KNOW?

A cross-section of a tree is often called a **tree cookie** because of its shape.

Draw a Tree Cookie

If you are still outside, try to find a tree that has been cut down and draw a diagram of the cross-section showing all the rings!

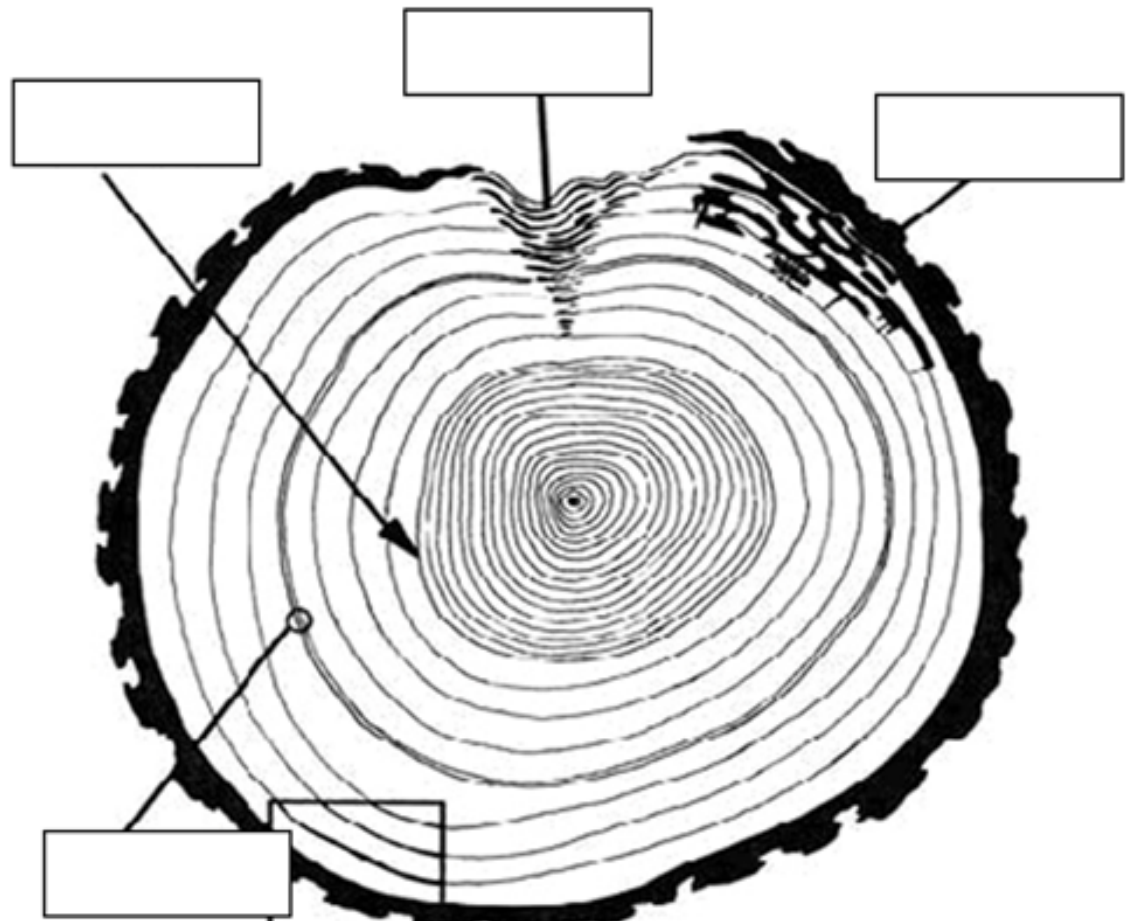
Sometimes the cross-section won't be a perfect circle, reflecting the history of the tree.

Use your drawing (or the drawing below, if you didn't find a suitable tree) to try and work out its history by looking at the growth rings. There are some suggestions below to help you....

Label the Diagram

Fill in the boxes to show where growth rings were affected.

Possible impacts include a drought year, insects boring through the bark to lay their eggs, slow growth due to early years of overcrowding, and a fire burning away some of the outer bark.



Write A Story

Your story should explain all the different things that happened to the tree above – don't forget to say how old it was when these things happened!

This image shows a blank sheet of white paper with ten horizontal dashed lines, typical of primary-ruled notebook paper. The lines are evenly spaced and extend across the width of the page. There is no handwriting or other markings on the paper.

ONLINE RESOURCES FOR YOU

- Check out our website:
<http://theweaselhead.com/>
- Send us an email! If you need help completing these activities, you can send us your questions here. If you want to show off your work, you can send us photos of your worksheet, too!
education@theweaselhead.com



**THANKS FOR
COMPLETING
THE WEASELHEAD
AT HOME
FIELD TRIP**

