

# Section Two: Exploring the Valley



Cornwall Heritage  
Trust

## Exploring the valley:

### **Science**

Different animals in different habitats

Animals and plants in a different habitat

Find out more about trees

Compare two different trees

### **English/Literacy**

Responses to woodland words

Creative writing

Ancient tree poem

### **Maths/Numeracy**

Measuring the properties of trees

How old is a tree?

## What are the different parts of a tree? - 1

Read the information about the different parts of a tree and match the description to the words in this list: *Tap root Branches Twigs Flowers Fruits Roots Winter buds Leaves Trunk*

These are either soft, flat and wide, or tough and spiky. They are usually, but not always green in spring and summer.

\_\_\_\_\_

These also support the tree and draw water from the soil to feed the tree.

\_\_\_\_\_

This is the strongest part of the tree. It holds everything else up. It is covered in *bark* which is brown and protects the tree from bad weather and animals.

\_\_\_\_\_

This goes straight into the ground and is like an anchor for the tree at the centre.

\_\_\_\_\_

These grow from the main trunk. They hold twigs, leaves and fruits.

\_\_\_\_\_

Most broadleaved trees have no leaves in winter. Instead they have winter buds. The bud has the beginnings of next year's shoots, leaves and flowers.

\_\_\_\_\_

All trees have flowers. They make the seeds from which new trees may grow.

\_\_\_\_\_

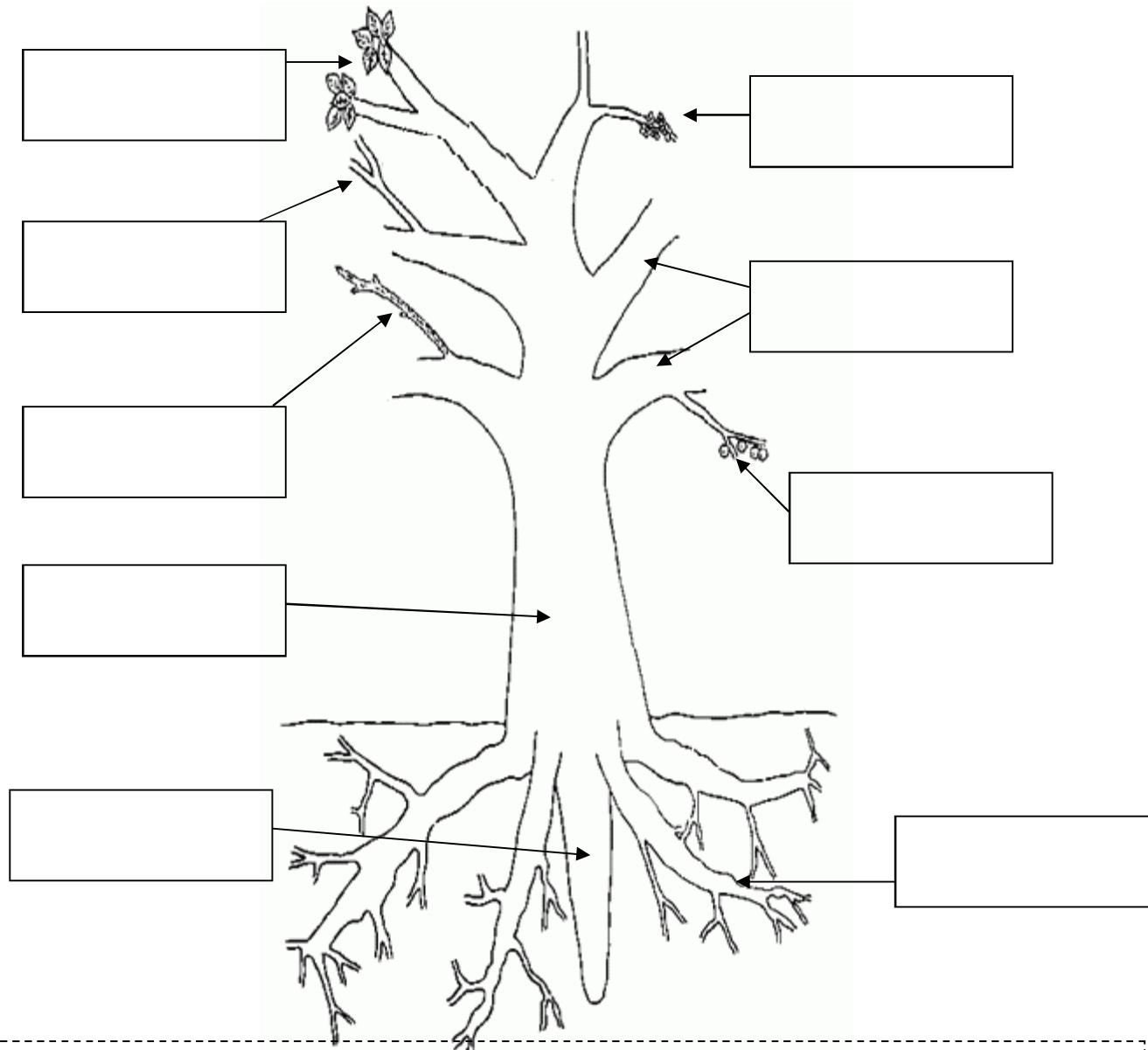
These grow from the main trunk. They hold leaves, fruit and buds.

\_\_\_\_\_

These grow from the flowers once they have been fertilised. They have seeds inside them.

\_\_\_\_\_

# What are the different parts of a tree? - 2



Using the descriptions, write the names of the parts of the tree, listed here:

*Tap root Branches Twigs Flowers Winter buds Fruits Roots Leaves*

## What are the different parts of a tree? - 3

Pick three trees that you see in the woods. Fill in this grid with drawings of the different parts of each of

Type of tree	Drawing of leaf	Drawing of twig	Drawing of bark	Drawing of seed	Drawing of tree shape

# Worksheet: Different trees in the valley-1

There are many different kinds (species) of tree in the valley. Use the leaf ID pictures here to help you.



alder



ash



beech



birch



elder



field maple



hawthorn



hazel



holly



horse chestnut



oak










rowan









syc

# Worksheet: Different trees in the valley-2

Use this grid to record how many different species of tree you can find.

alder		Tick here if you find one
ash		Tick here if you find one
beech		Tick here if you find one
birch		Tick here if you find one
elder		Tick here if you find one
field maple		Tick here if you find one
haw-thorn		Tick here if you find one

hazel		Tick here if you find one
holly		Tick here if you find one
horse chestnut		Tick here if you find one
oak		Tick here if you find one
rowan		Tick here if you find one
sycamore		Tick here if you find one

Which is the most common tree in the valley, according to your sur-

## Comparing a deciduous with a non-deciduous tree

Trees that *drop their leaves each autumn are called 'deciduous'*, from the Latin for 'to fall'. Other names for deciduous trees are broadleaves or hardwoods. Some of the more common species are oak, poplar, beech, apple and chestnut.

*Coniferous trees have small, waxy and usually narrow leaves* (needles or flat scales). 'Coniferous' means that it is a cone-bearing tree. The most common conifers are spruces, pines and firs. Other names used for coniferous trees are evergreens, softwoods and (appropriately enough) conifers.

However, the name "evergreen" is not really a good synonym because laurel, acacia and eucalyptus are also evergreens, and although not deciduous, they are not cone-bearing trees and they have leaves rather than needles.

Deciduous and coniferous sound like two distinct types of tree, and generally they are,

# Compare two different trees

Look at the pictures of the two leaves and any real leaves like these, if you have them.



Write three words under each leaf to describe them

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How do the leaves differ? Make a list of differences in this space:

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---

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Find out the information to complete this grid:

	Oak	Holly
How tall it grows		
How big the circumference of the trunk can be		
What fruit it produces		
Deciduous (does it lose its leaves in winter)?		



# Life-cycle of a tree

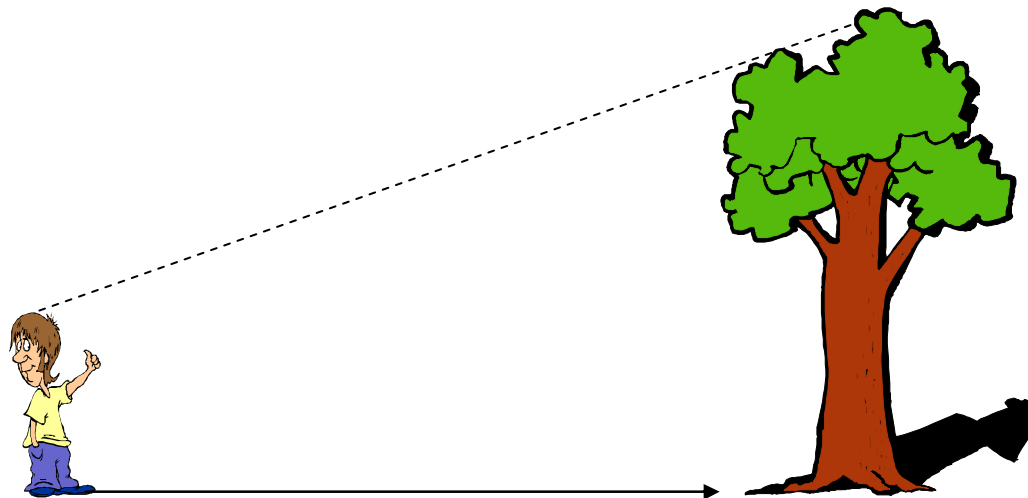
Cut out the pictures and put them in order using arrows. Use the clues to help you decide where to put them.

<p><b>Fruiting.</b> After a flower has been pollinated, the flower grows into a seed and fruit.</p>	<p><b>Seedling.</b> The plant begins to grow its first leaves and stems. The plant is still fragile at this time.</p>	<p><b>Juvenile.</b> The plant grows very quickly, putting on new leaves, stems and branches.</p>
<p><b>Pollination.</b> Pollen grains are taken from flower to flower by bees and other flying insects. This mixing of pollen is known as pollination.</p>	<p><b>Germination.</b> When the weather is right and there is enough water (but not too much) the seed begins to germinate.</p>	<p><b>Seed.</b> The seeds is scattered by animals. They are dispersed. Some find their way into soil and compost.</p> 
<p><b>Flowering.</b> Growth slows as the plant begins to produce flowers. Flowering can be triggered by the time of year or the weather, particularly temperature.</p> 	<p><b>Dispersal.</b> Animals like squirrels, take the seeds away from the chestnut tree and bury them.</p>	

## How high is a tree: doing sheet 1

*You need a tape measure, a clinometer, pencil and paper*

1. Using a tape, measure your height in metres and enter the figure into the column marked your height.
2. With a clinometer lined up between your eye and the top of the tree, move away from the tree until the clinometer lever falls at a 45 degree angle.
3. Measure the distance between you and the tree (m) and enter in the column marked distance from tree to you.
4. Add both figures together to find the height of your tree in metres.
5. Do the same thing for another nine trees, so you have a sample of 10 trees.



## How high is a tree: doing sheet 2

Tree sample number	Your height (m)	Distance from tree to you (m)	Height of tree (m)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Are your trees roughly the same height (yes/no) ? \_\_\_\_\_

Do you think they were planted at the same time (yes/no) ? \_\_\_\_\_



## How high is a tree: a quick way to work it out

A quick method of finding out the height of a tree used by some African and Native American tribes is to walk away from it until you can just see its top when you bend and look through your legs

The number of paces from the tree to the spot where you stop is the same as its height.

You could measure that distance with a ruler or a stick of known length instead of using paces.

Conversion chart

5 ft = 1.5m

30 ft = 9.1m

50ft = 15.2m

100ft = 30.5m,

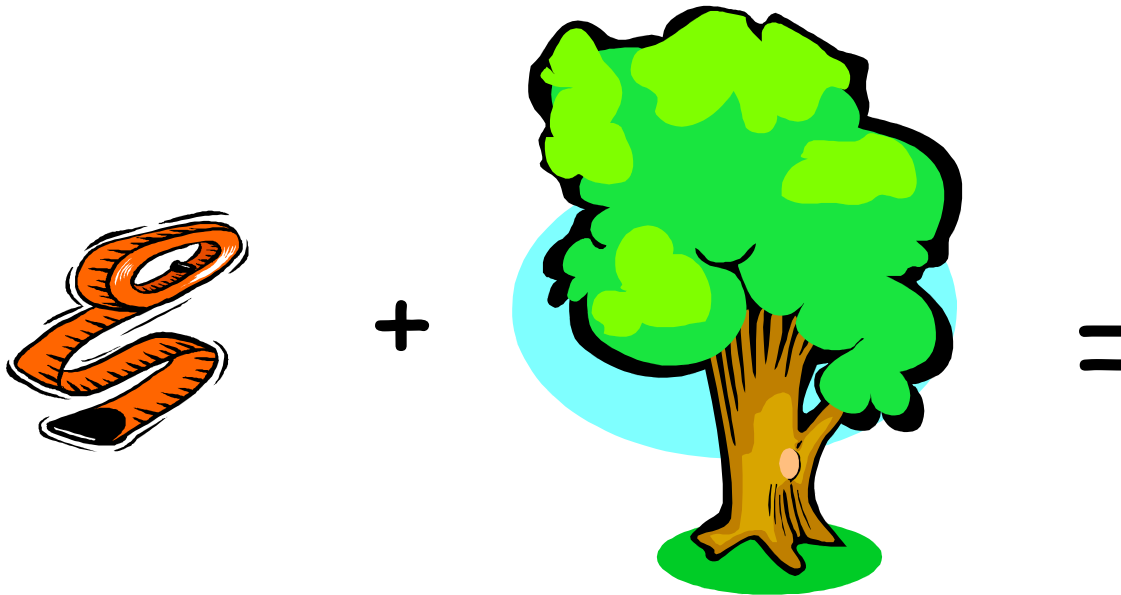


distance with a ruler instead of using paces.

# How old is a tree: doing sheet

Most people know that you can work out the age of a tree by counting the rings inside its trunk. The only problem with this is that you have to cut it down and kill it to tell how old it is! So here is another way of working out, roughly, how old a tree is:

1. Measure round the trunk — you need to be about one metre up from the base, avoiding bits that stick out
2. As a rough guide, every 2.5cm that you measure around the tree is about a year's growth ( A tree gets wider by about 2.5cm each year).
3. Once you have measured your tree, divide the number of centimetres by 2.5 and you will have the *approximate* age of the tree

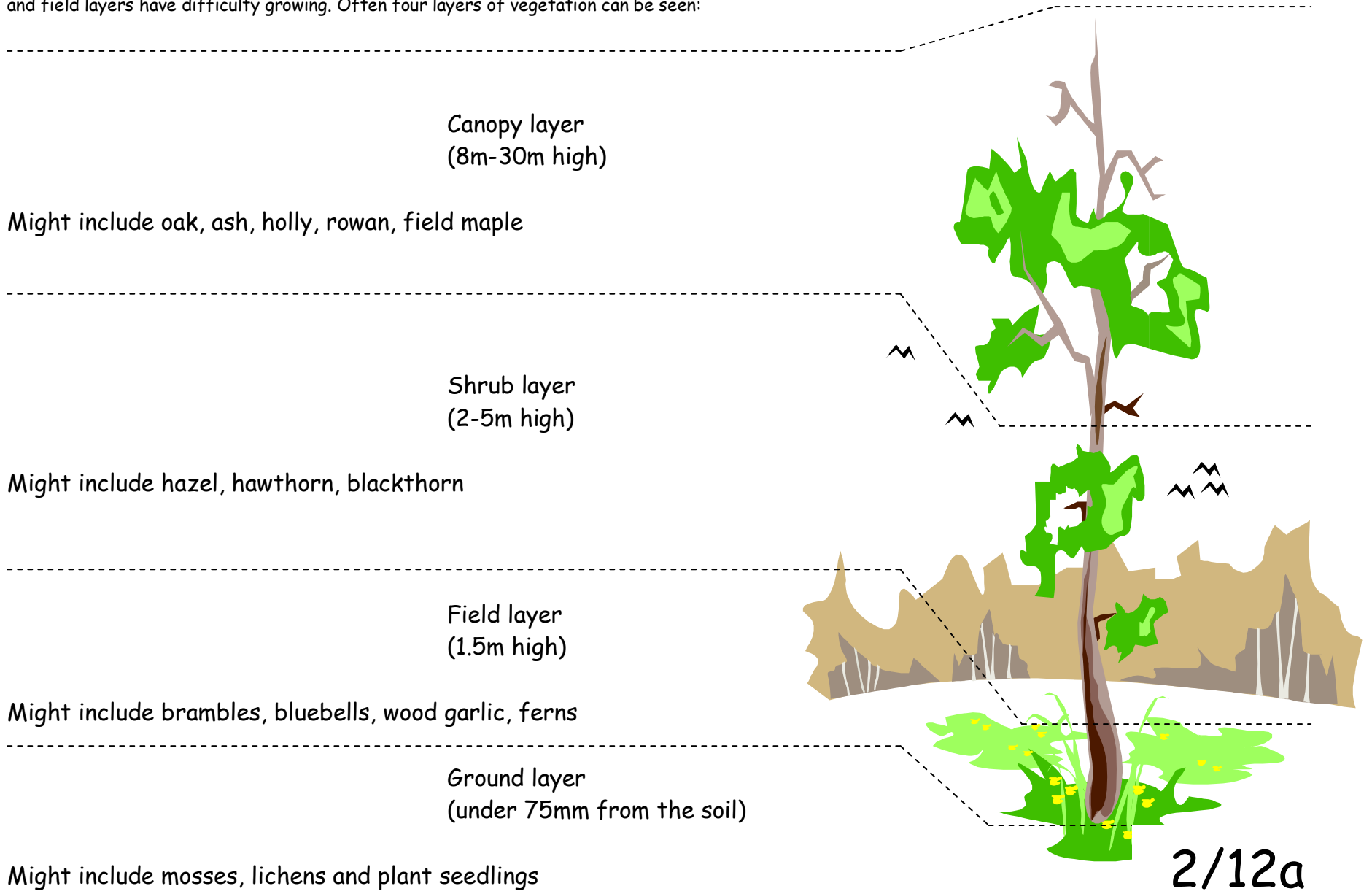


Circumference (cm)	Rough age of tree
50	20 years
75	30 years
100	40 years
125	50 years
150	60 years
175	70 years
200	80 years
225	90 years
250	100 years
275	110 years
300	120 years
325	130 years
350	140 years

**Different species of tree grow at different rates:** The girth of a tree on average grows at 2.5cm a year; oak and beech trees average 1.88cm a year; pine and spruce manage 3.13cm a year; and sycamore grows at 2.75cm a year

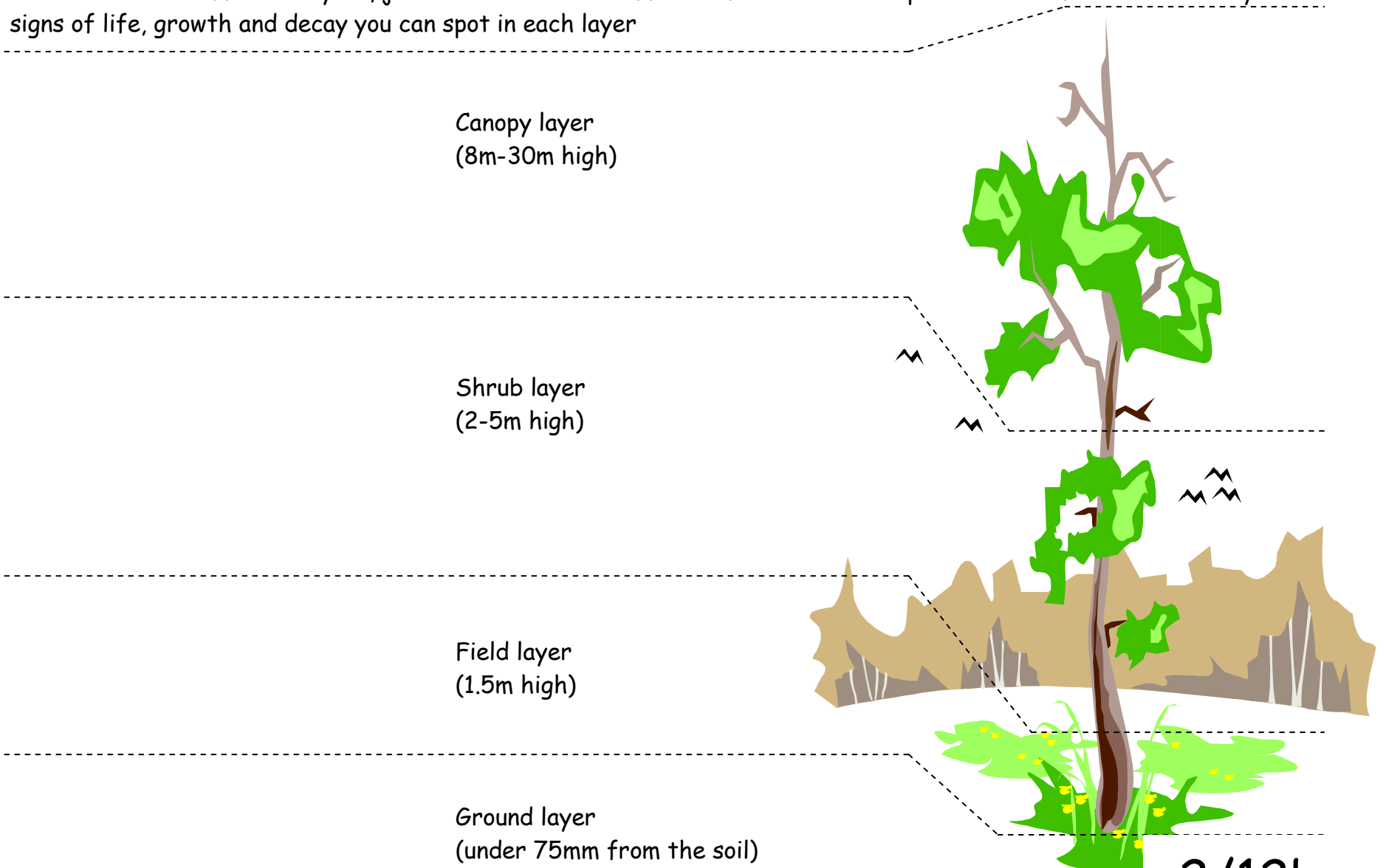
# Worksheet: Woodland layers: information page

The woods often have different layers. These layers turn a group of trees into a woodland. Not all woods have these layers. For example, ash woods let in lots of light so there is plenty of growth under the canopy; beech woods and conifer plantations cast a heavy shade so that plants in the shrub and field layers have difficulty growing. Often four layers of vegetation can be seen:



# Worksheet: Woodland layers

The woods have different layers, just like a house has different floors. In the space on the left write down any signs of life, growth and decay you can spot in each layer



## Worksheet: Who lives in the wood -1?

### **Canopy layer** (8m-30m high)

Some of the larger birds live up here in nests far away from predators. Squirrels also nest at this height. Bats might nest in old holes in tree trunks

*Challenge:* find some twigs on the ground and see how hard it is to build a nest with them. Think about doing this with just a beak!

### **Shrub layer** (2-5m high)

Birds build nests here. Insects and other creatures make their homes here

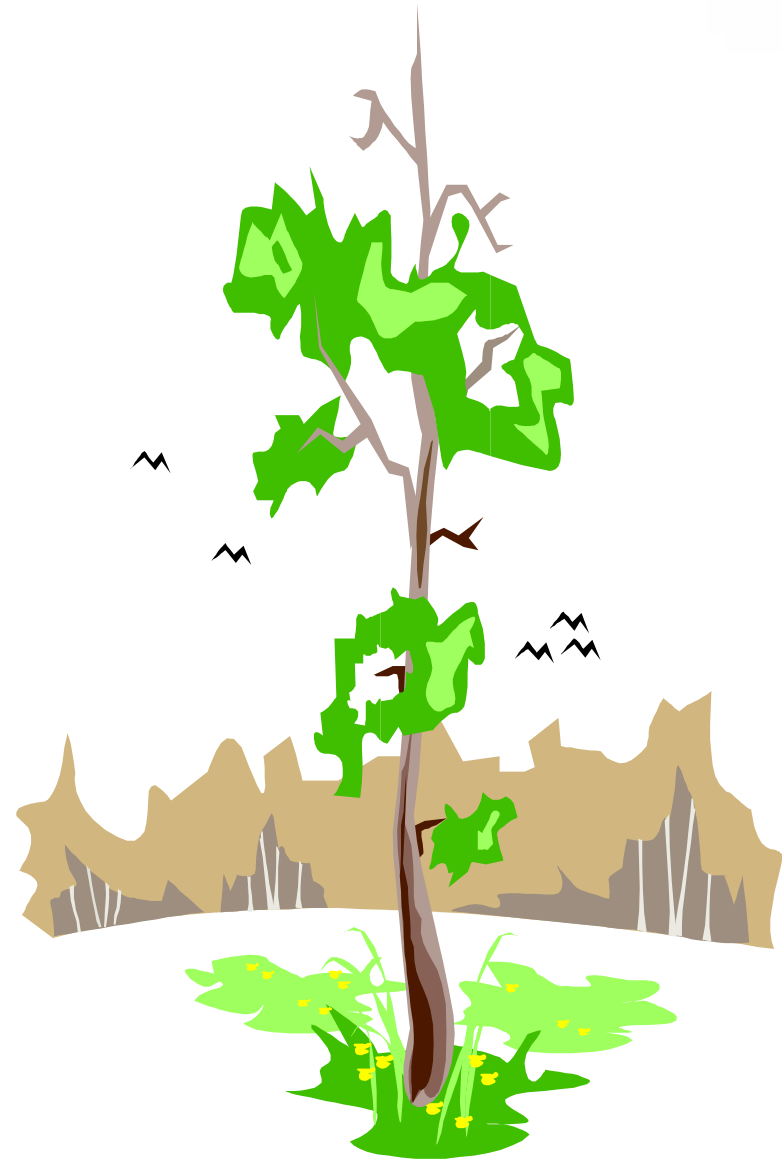
*Challenge:* find a holly. Look at the leaves carefully. There may be wiggly tracks damaging the leaves, made by insects called "leaf miners" that lay eggs on the underside of the leaves in May or June. The larvae burrow through the leaf, then break out and fly away.

### **Ground layer** (under 75mm from the soil) and **Field layer** (1.5m high)

Animals that depend on a supply of plant material for food live here; deer, badgers, rabbits, mice, voles live here; thrushes live on the edges of woods; millions of smaller creatures like woodlice live in the leaf litter on the ground

*Challenge:* look into the leaf litter on the ground; take off the top layer; how many different kinds of creatures can you find?

**Underground** Look for holes in the ground. They may be of different sizes. Small holes (2cm) may house voles; larger holes (10cm) may house rabbits), Bigger holes than this may have been dug by foxes and badgers.

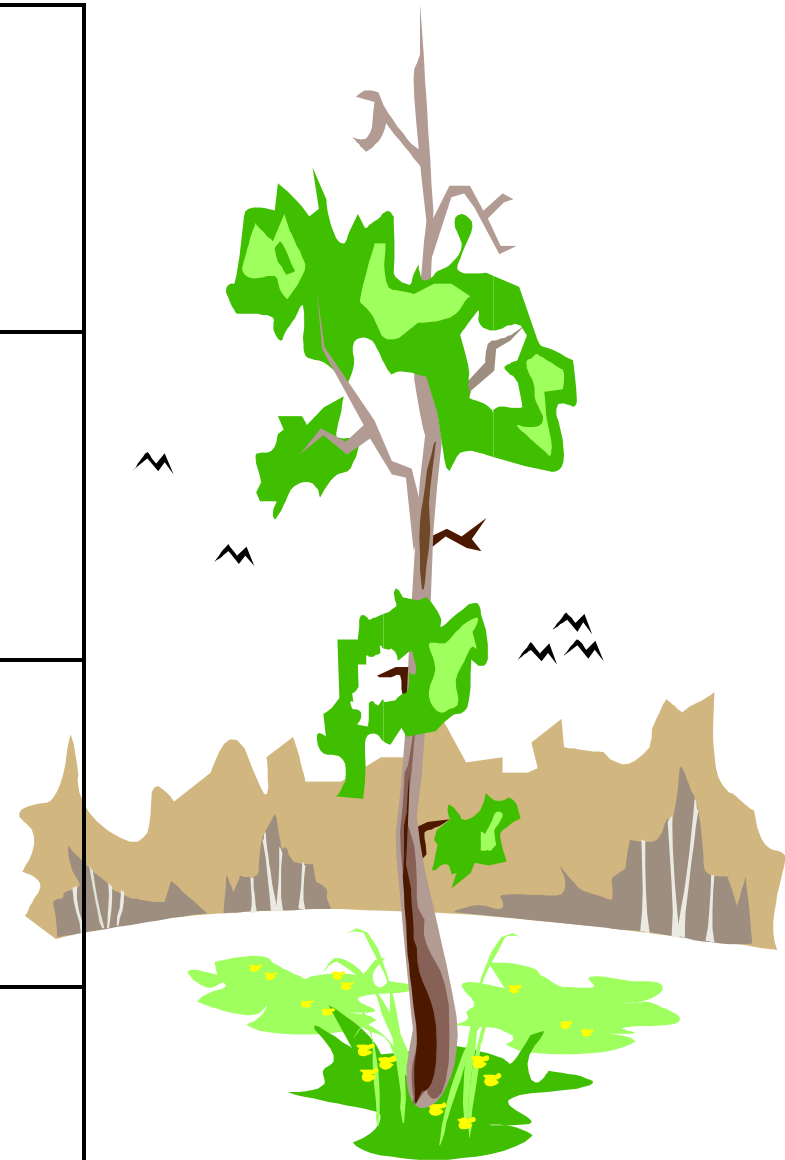




# Worksheet: Who lives in the wood -2?

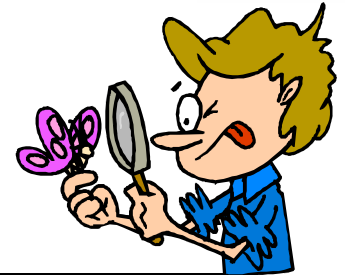
Cut out the animals from the next page and stick them in the boxes to show where they live in the forest

Canopy layer
Shrub layer
Ground layer
Underground



# Worksheet: Scavenger Hunt: doing sheet

The woodland floor will be full of different things. Collect one of each of the following items and put them in a bag. **DO NOT PICK ANY LIVING PLANTS OR FLOWERS**



Object to find	Tick when you have found it
A feather	
Something shiny	
Something beginning with the letter L	
Something soft	
Something round	
A seed	
Something straight	
Something beginning with the letter G	
Something man-made	

## Worksheet: Scavenger Hunt: thinking sheet

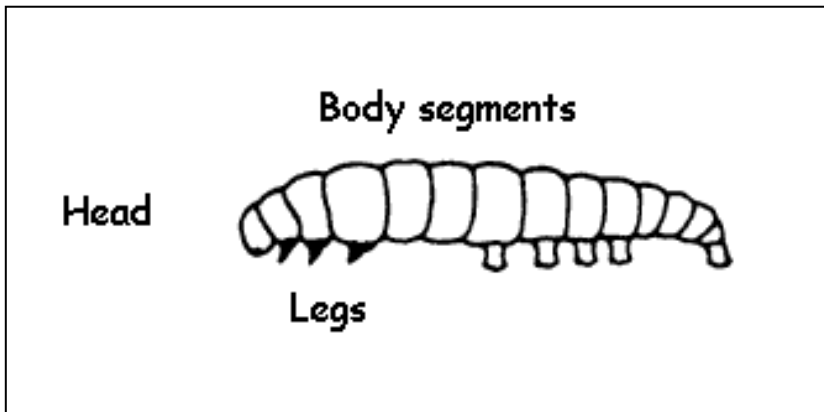
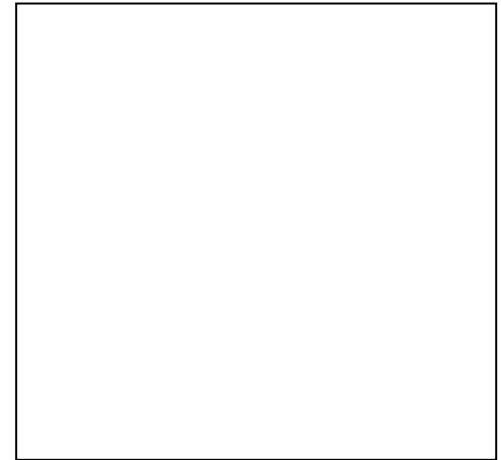
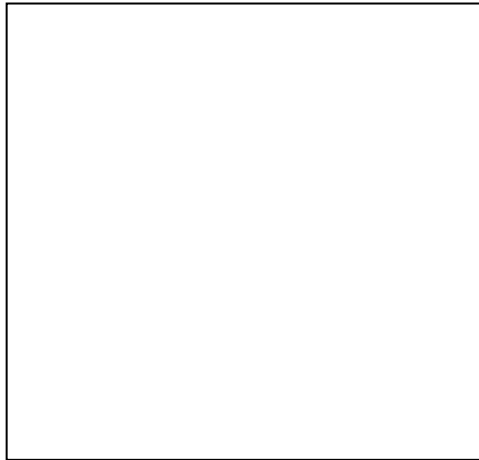
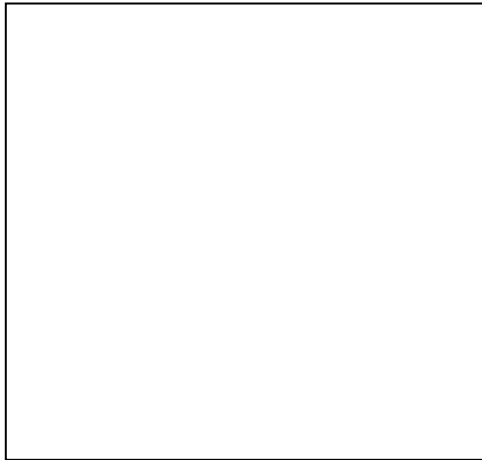
For each of the things you found on the woodland floor, fill in the boxes and be ready to say a few words about it to the rest of the class

What it is	What it does	Where I found it	What it eats	What lives on it	Shgpe/colour/ smell
A feather					
Something shiny					
Something beginning with the letter L					
Something soft					
Something round					
A seed					
Something straight					
Something beginning with the letter G					
Something man-made					



# Minibeasts

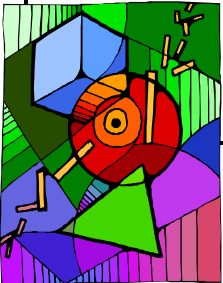
How many Minibeasts can you find today? When you find a beastie, carefully examine it under a magnifying glass. Draw the creature in detail, paying particular attention to features such as the number of body parts, legs, eyes and wings. Use each box for a different Minibeast and try to label the body parts. One has been done for you to show you how to do it.



## Shapes in the woods

Many different shapes can be found in the woods. See what objects you can find for each box and draw the object into the space.

Spirals or twists	Triangle	Scales	Heart shapes
Circles	Oval	Star shapes	A shape of your own



## **Getting to know the woodland: some ideas for more activities**

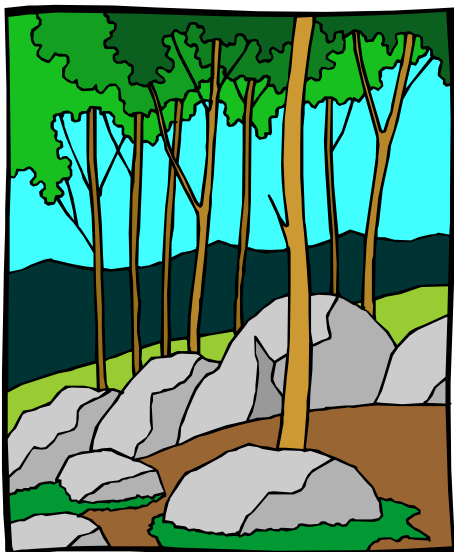
**Tree trail:** Feel the largest plants whilst blindfolded, use touch and smell to gain an impression of the tree. Choose different trees - Are they the same? How are they different?

**Get to know a tree:** Blindfold a child and lead them on a journey through the woodland to a specific tree. They must get to know it by feeling the bark texture, finding branches and using any other way to recognize it without looking at all. Still blindfolded, lead the child back to where you started. Now take off the blindfold let them try to find their tree using their sense of touch to confirm it. What other senses helped them.

**Paint match:** Get a colour paint chart for each child from a DIY store. Each child has the challenge of finding as many colours on the chart from the natural world around them.

## How old is your woodland?

1. Using a tape, measure 1.5 metres up the tree from the ground.
2. At this height, wrap your tape tightly around the trunk and measure the girth (circumference) in centimetres.
3. Put your answer in the column marked circumference in cm.
4. If your tree is an evergreen tree, divide this figure by 3. If your tree is a broadleaf, divide by 2.5 (you may need a calculator for this). Write this figure in the column marked age. This number is the rough age of your tree.
5. Do the same thing for nine more trees.



<u>Tree Sample Number</u>	<u>Circumference in cm</u>	<u>Age</u>
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

# Activity 1: Food Chains: introduction

Plants and animals that live in the woods are part of a complicated food chain. Food chains show how different animals and plants rely on each other. A food chain starts with a green plant, which is a producer. Plants use the sun to grow and make (produce) leaves, seeds and fruit. These can be used as food by animals. Animals are called consumers, because they eat (consume) plants or other animals.

## Producers

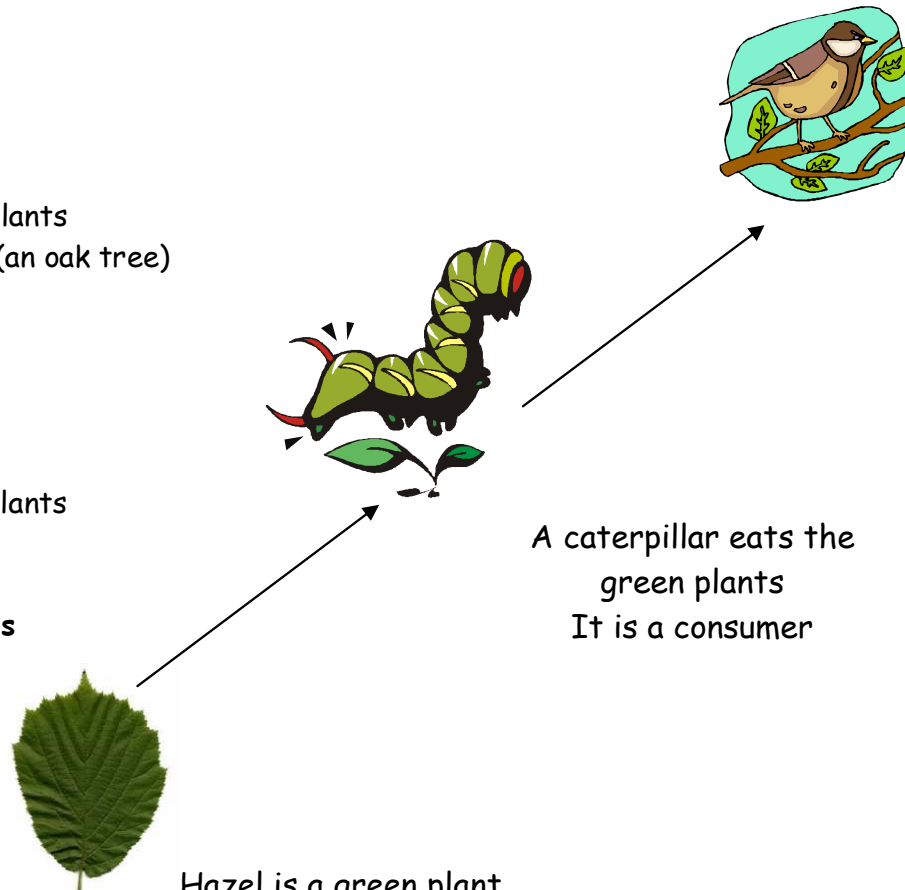
Green plants  
Dead leaves which fell off green plants  
Acorns—from a large green plant (an oak tree)

## Consumers that eat plants

Worms eat dead leaves  
Snails and caterpillars eat green plants  
Squirrels eat acorns

## Consumers that eat other animals

Badgers eat worms  
Blue tits eat caterpillars  
Thrushes eat snails  
Foxes eat thrushes, blue-tits and squirrels



Hazel is a green plant.  
It is a producer

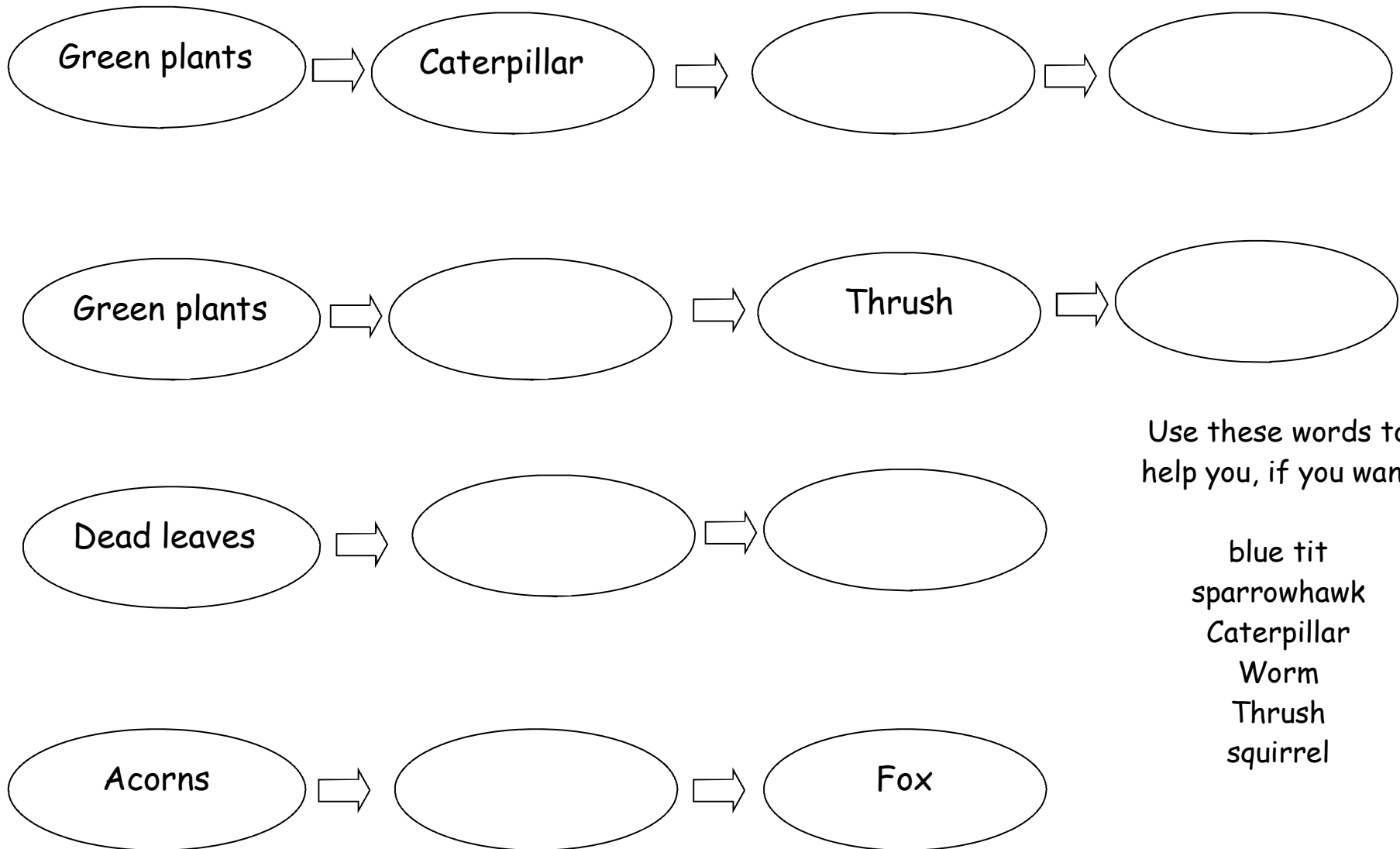
A caterpillar eats the  
green plants  
It is a consumer

A blue tit eats  
caterpillars  
It is a consumer



## Activity 2: Four food chains to fill in

Work with a partner to think about who eats what in the woods



Use these words to help you, if you want

blue tit  
sparrowhawk  
Caterpillar  
Worm  
Thrush  
squirrel

## Activity 3: Woodland Food Chains Outdoor Activity—Instructions

1. Students take laminated pictures of food web components (cards on next page) out of a hat and are asked to get themselves into groups according to whether they eat plant material, dead material or other animals.
2. An adult keeps the "Trees and Plants" card.
3. Ask them to introduce their creature.
4. Students tape their picture to the front of their shirts.
2. Arrange them into 3 lines
3. Once they have worked out which group they fit into, give them a 'plant, plant eater, or meat eater' card to remind them. The plant eaters then take strings from the trees and plants person and the meat eaters then take strings from their prey until we have built up a simple but sufficiently complex food web.
4. Encourage discussion about what kills / eats those at the top of the food web (Le. humans, cars, pollution, hunting etc.), what happens when anything dies in the web (they go and stand next to the plants person and join strings with the fly, ant and fox etc.) and what would happen to the number of e.g. mice if the owl was taken out of the food web .
5. Finally, resurrect the owl and take away the trees and plants! Students must drop the string if they either have nowhere to live or anything to eat thereby emphasising the importance of the woodland for its community of wildlife. Collect cards and strings.

Activity 2: Woodland Food Chains Outdoor Activity—Pictures 1

Owl



Eats small mammals like mice, voles and shrews

Badger



Eats hedgehogs, beetles and worms

Fox



Eats small mammals like rabbits, hares, rats and mice

Woodpecker



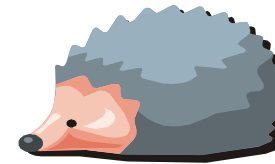
Eats insects on the ground or in trees

Squirrel



Eats fruit and nuts from trees

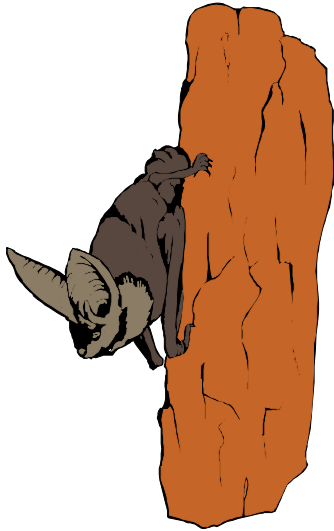
Hedgehog



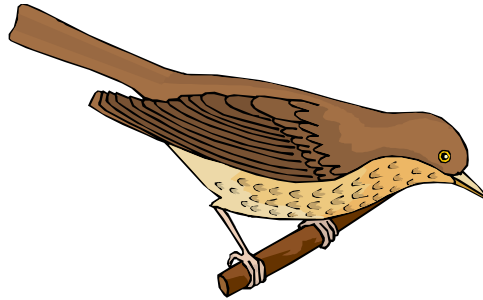
Eats slugs, small frogs and beetles

Activity 2: Woodland Food Chains Outdoor Activity—Pictures 2

Bat



Thrush



Eats worms, snails, beetles, berries and fruit

Mouse



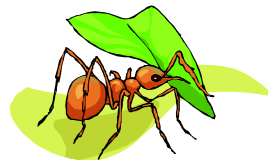
Feeds on seeds and small plants

Centipede



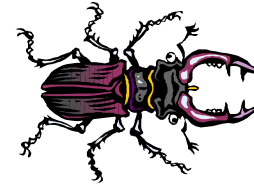
Is a carnivore and eats other invertebrates (insects etc)

Ant



Eats the remains of dead plants

Beetle



It eats other insects

Activity 2: Woodland Food Chains Outdoor Activity—Pictures 3

Spider



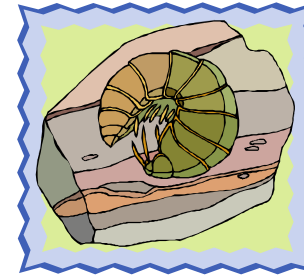
Traps and eats insects

Vole



Eats seeds and vegetation

Woodlouse



Eats dead wood and other plant remains

Snail



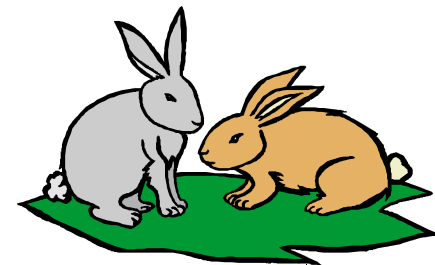
Feeds on dead plants or the leaves of growing plants

Caterpillar



Feeds on the leaves of growing plants

Rabbit



Eats small plants and seeds

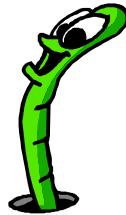
Activity 2: Woodland Food Chains Outdoor Activity—Pictures 4

Moth



Drinks nectar from flowers

Worm



Feeds on all sorts of rotting material

Plants and trees



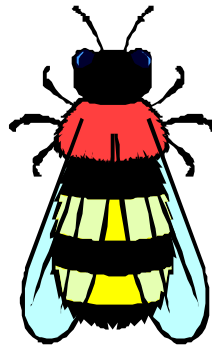
Things like leaves, fruit, berries and seeds

Magpie



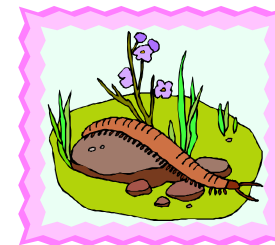
Eats the dead remains of other animals and the eggs of other birds

Bee



Gets its energy feeding on the pollen of flowers

Millipede



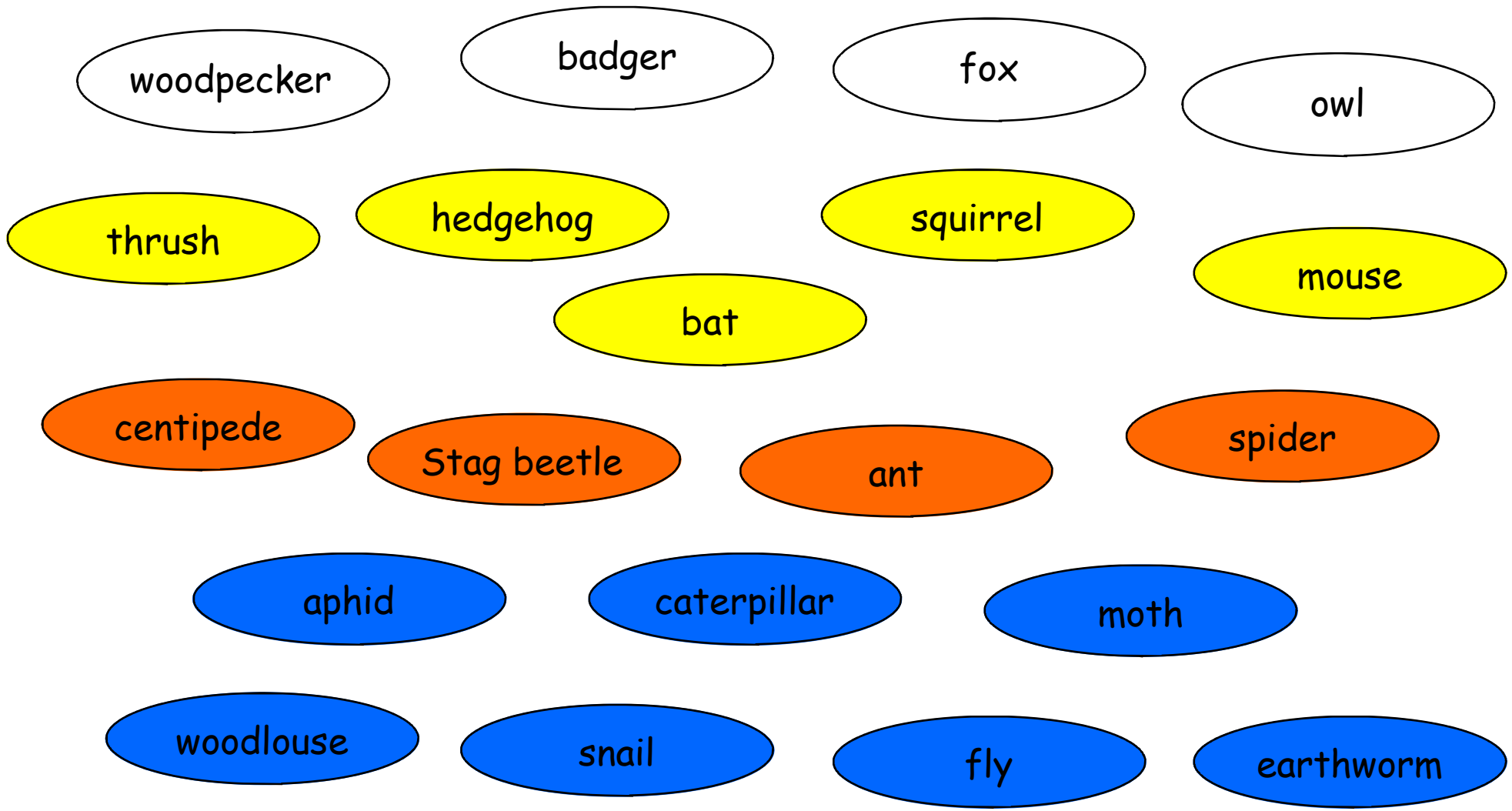
Feeds on rotting leaves ("leaf litter")

Plant	Plant	Plant	Plant
Plant	Plant	Plant eater	Plant eater
Plant eater	Plant eater	Plant eater	Plant eater
Plant eater	Plant eater	Meat eater	Meat eater
Meat eater	Meat eater	Meat eater	Meat eater

Activity 3: Woodland Food Web

# Woodland food web: who eats what in a wood?

Draw the arrows in the show who eats what in a wood



Trees and woodland plants



## Tales, poems and pictures - 1

Think about the words we use to describe trees and woodlands. Write down as many *adjectives* as you can to describe an old tree

The leaves are

The branches of the tree have

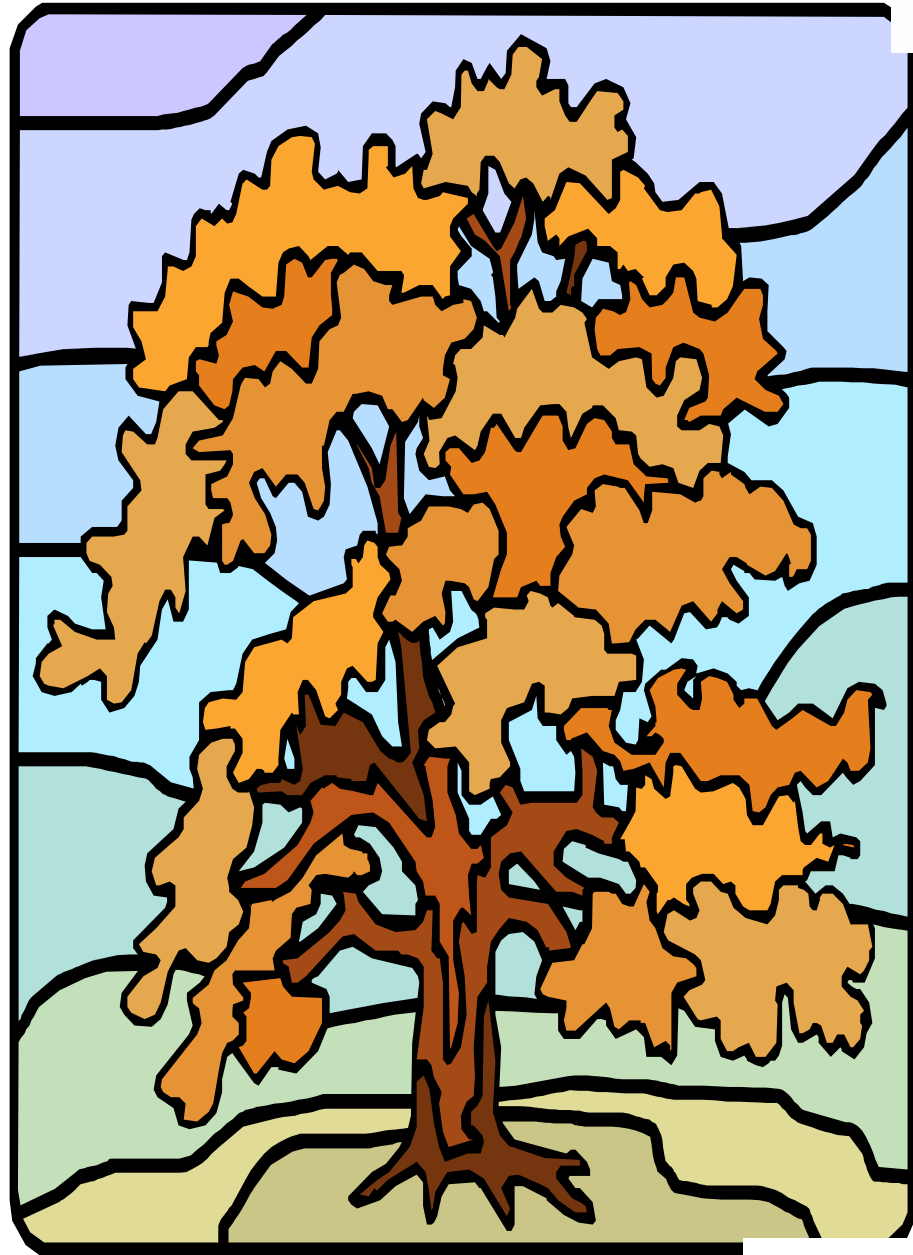
How high is the tree

The trunk of the tree

The roots of the tree are

The old tree is

Now use the words you have thought of to write a poem about an ancient tree



## Tales, poems and pictures - 2

Lots of old stories are told about woodland trees and shrubs

### Hazel

Hazel trees were cultivated by the Romans and because there were lots of them in Scotland, they called the country by the latinised name Caledonia, which comes from Cal-dun which means 'Hills of Hazel'. In Scotland, an old custom of love divination still takes place on Halloween. Two hazelnuts are placed on burning embers, if they burn quietly, and remain side by side the two people they represent are well-matched. Diviners in search of water hidden underground are known to often use forked branches taken from the Hazel tree traditionally called 'Wishing Rods'



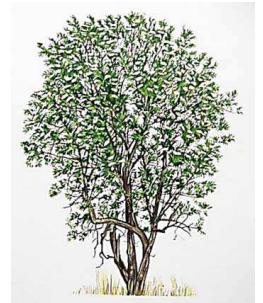
### Hawthorn

In the old days, when people celebrated May Day, instead of dancing around the maypole, they danced around a hawthorn tree. Hawthorn blossom is called "may" and people used to gather garlands of may blossom.. Another name for hawthorn is the bread and cheese tree. If you've ever heard of the saying "ne'er cast a clout till May is out" it means don't wear less layers of clothes until the may blossom is flowering.



### Elder

The elder tree was a symbol of sadness. Some people thought that the cross on which Jesus Christ was crucified, was made from it. Maybe this was the reason why country people avoided using it. Elder means "fire tree" People in Denmark believed a spirit called the Elder-tree mother lived in elder branches. If furniture was made from the wood, the Elder-tree mother would follow and haunt the owners. To avoid this, she had to be asked before the wood was cut.



### Ash

In the North of England it was thought that by a woman placing an Ash leaf in the left shoe, she would be fortunate enough to meet her future spouse immediately. Another traditional English verse was held to have the power to reveal weather information:

### Weather Changes

'If the ash leaf appears before the oak,  
Then there'll be a very great  
soak.  
But if the oak comes before  
the ash,  
Then expect a very small  
splash.'



Now make up your own folk story about a shrub of your choice. You may like to use one of these ideas.