HOLYWELLS PARK | 01473 433990
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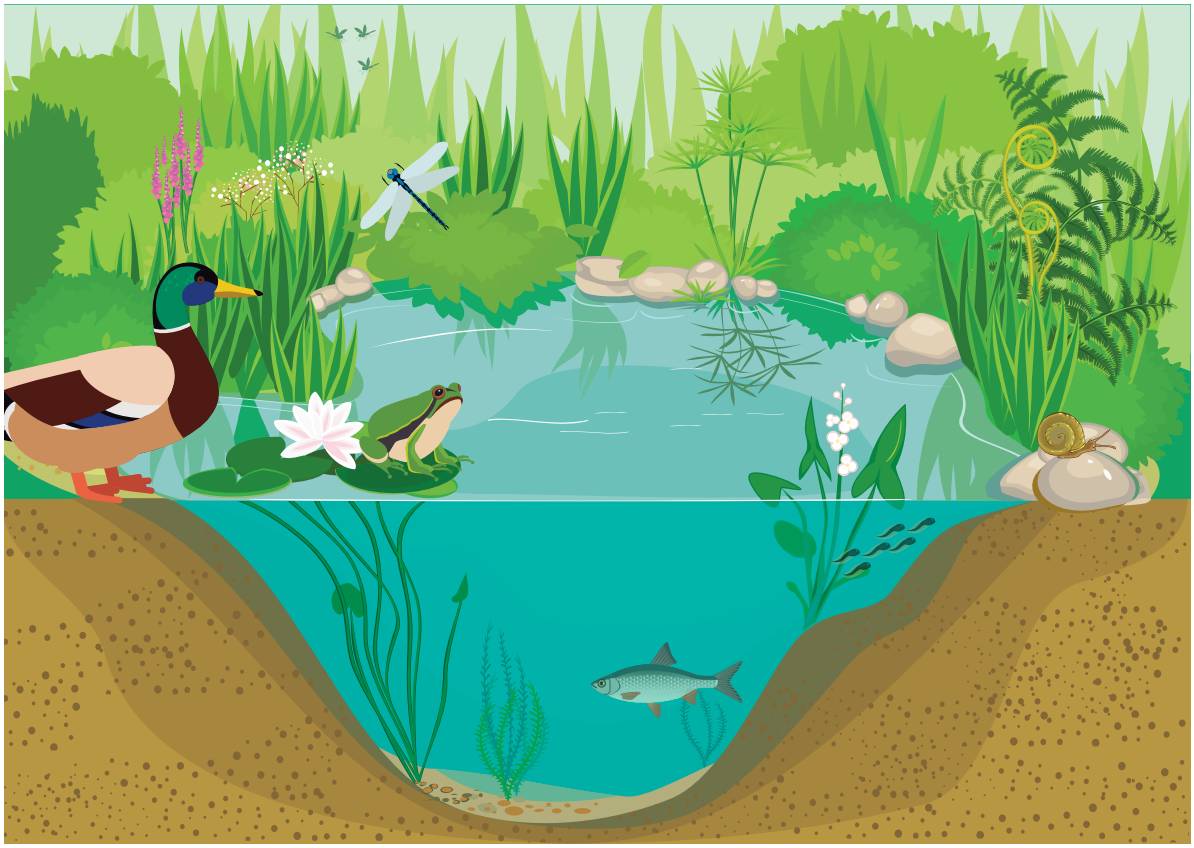
IPSWICH BOROUGH COUNCIL
Heritage LOTTERY FUNDED

4 Habitats

A **habitat** is a place where something lives. It might be as small as a beetle's tiny crevice in the bark of a tree, or as large as a sparrowhawk's hunting ground. Plants and animals adapt to particular conditions in each habitat.

Different habitats that you will find in Holywells Park are meadows, wet and dry grasslands, ponds, scrub, woodland, heath and reedbed. Plants and animals develop special features to survive particular conditions in each habitat. Different plants grow in certain places because of their special requirements and adaptations. Many animals need more than one habitat to survive.

The three main habitat areas in the park are **freshwater, woodland** and **grassland.**



Freshwater

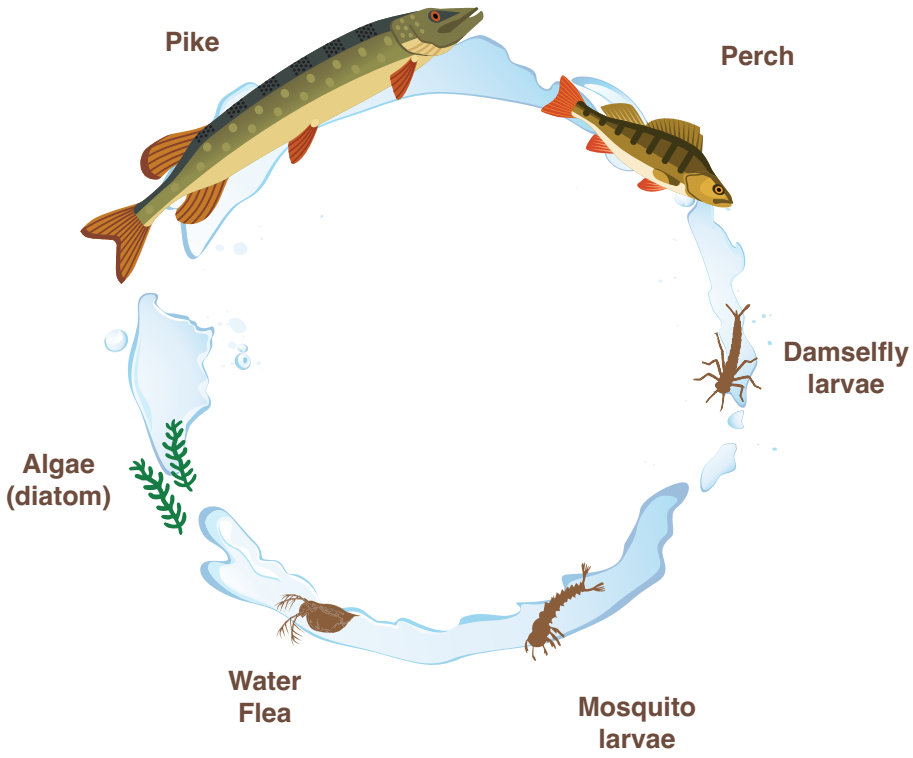
INTRODUCTION

Holywells Park contains a network of spring-fed ponds linked together with streams and a canal. As the water flows through the system it eventually reaches the River Orwell before flowing out to sea.

When you explore a pond, you discover a world teeming with a huge variety of life. You can see various pond plants and insects, fish, snails, amphibians and birds and signs of mammals around the banks. When pond dipping, you will find that some insects live at the surface, some prefer mud at the bottom while others live among the water plants.

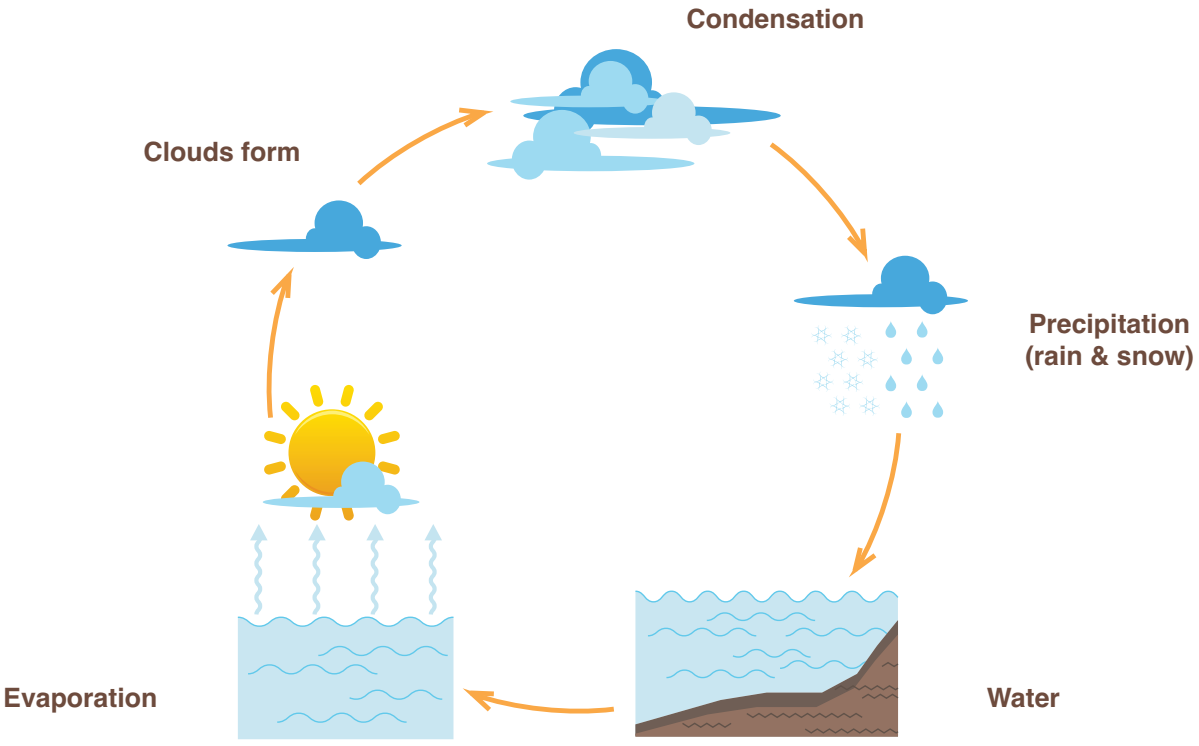
Food chain

A food chain shows how animals and plants rely on each other for food and Energy (See section 6)

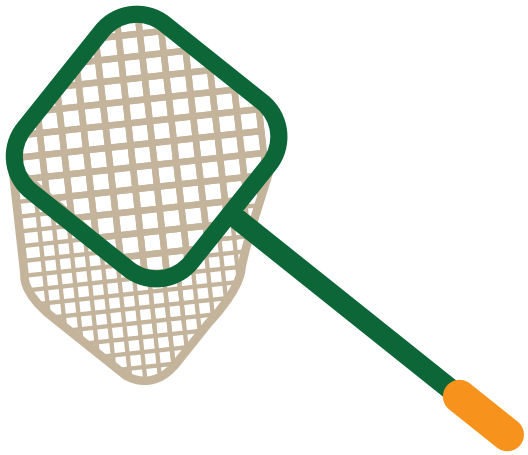


Water cycle

The water cycle describes how water evaporates from the surface of the earth, rises into the atmosphere, cools and condenses into rain or snow in clouds, and falls again to the surface as precipitation.



ACTIVITY 1 POND DIPPING



INTRODUCTION

Pond dipping is a great way to observe many of the smaller creatures in the pond close up.

MATERIALS

- Nets, trays, viewing pots, identification sheets
- One net per two or three people
- One white tray per two or three people
- Identification and recording sheets

  (Downloadable sheets from web link and materials are provided by a Ranger)

INSTRUCTIONS

1. Fill the white tray with pond water
2. Gently sweep your net just below the water's surface
3. Turn the net inside out and dip it into the tray to empty it
4. Look closely at any creatures and record them. Use the I.D. chart or key to find out which animals you have caught
5. Make sure when emptying trays that all creatures are put back in the pond
6. Compare results with other groups who have dipped in different areas of the pond
7. Try to cause as little disturbance to wildlife in and around the pond as possible

Use a recording sheet to note how your pond creature moves, how it breathes, how many legs it has, what it eats and how it has adapted to survive under water.

STAY SAFE

- Use a flat area or dipping platform
- Stay spread out and keep group sizes small
- Cover any cuts with plasters and always wash hands when finished
- Do not move any trays when filled with water to prevent spilling
- Do not run

REVIEW

How many species did you find in total?

In your group, produce a newspaper about the events that happen in a pond during a day. Think of a title for your newspaper and headlines for your stories, e.g. diving beetle attacked, water scorpion charged with assault. Include imaginary interviews with the pond residents, write about their day-to-day concerns and about any dramatic events that may have happened. Draw pictures to illustrate your stories. Include special features such as articles on fish, news from other ponds or a weather report.

ACTIVITY 2 UNDERWATER CAMERA

INTRODUCTION

Pond dipping is a great way to observe many of the smaller creatures close up but an underwater camera allows you to view more natural behavior as well as the potential to see larger creatures such as amphibians and fish.

This activity works best together with pond dipping and can be incorporated into the 1 hour session.

MATERIALS

Underwater camera and viewing screen (provided together with the Ranger)

INSTRUCTIONS

1. The Ranger will operate the camera
2. Take turns viewing the screen as we explore the underwater world
3. Look out for an array of wildlife from the tiny water flea to the voracious pike

STAY SAFE

- As with pond dipping, use a flat area or dipping platform
- Keep back from the camera to allow for a better view of the underwater environment

REVIEW

How does the bottom of the pond change at different locations (vegetation, sediment, water clarity)?

ACTIVITY 3 WATER CYCLE ACT OUT

INTRODUCTION

For this game students move around a makeshift water cycle playing the part of the different stages of the water cycle. In summary, the majority of water ends up in the sea, and the minority in fresh water systems such as lakes.

This activity demonstrates how the water cycle works in a local and global environment.

MATERIALS

- Bench to represent a mountain
- Ropes to form the shape of a river
- Blue tarpaulin as the oceans
- Blue balls as water
- Small mats or cushions as clouds
- Red balls as pollution

INSTRUCTIONS

- Find a bench in the park
- Place the rope spreading out from the bench to the tarpaulin
- The group leader should stand at the stream throwing water at the pupils to highlight how the amount of water continually increases on the way to the sea

STAY SAFE

Slips, trips, falls and collisions

This is a dynamic game so be aware of potential hazards. Wear suitable clothing and footwear. It is best to act out this activity in an open area.

REVIEW

Using your knowledge of the water cycle, why do plastics end up in such high densities in the sea? And how can we help to prevent this.

Woodland

INTRODUCTION

When you walk in a wood, it might at first appear quiet and deserted but in its depths hides a wealth of life. Trees support a diverse community, from the roots under the ground to the top branches. Plants such as ferns, wildflowers and shrubs also grow beneath the trees. An incredible variety of insects will be living on the bark or leaves. Fungus rots down dead branches or help roots to feed on minerals in the soil. Trees provide food and shelter for considerable numbers of birds and mammals.

Holywells Park has a mixture of woodland types and communities. Different species of tree have different plants and animals associated with them, living both on and underneath them. The reason certain trees grow in certain places is a complicated matter but it all links to the five key things a tree needs to grow:

Temperature

Most plants require a certain temperature to grow. Temperature signals the plant to grow or to go dormant. Temperature needs vary among plant varieties.

Sunlight

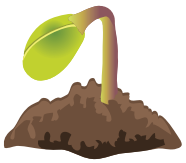
Plants require sunlight to perform photosynthesis, in which the plant produces sugars it uses for energy to grow. Indoor plants do well with a window facing south or southwest. Some outdoor plants do well in full sun, while others require a certain amount of shade to prevent leaves and flowers from burning.

Water

Plants require water both to make nutrients and to move nutrients through their body from the soil. Plants require differing amounts of water. If a plant has too much water, it could die.

Air

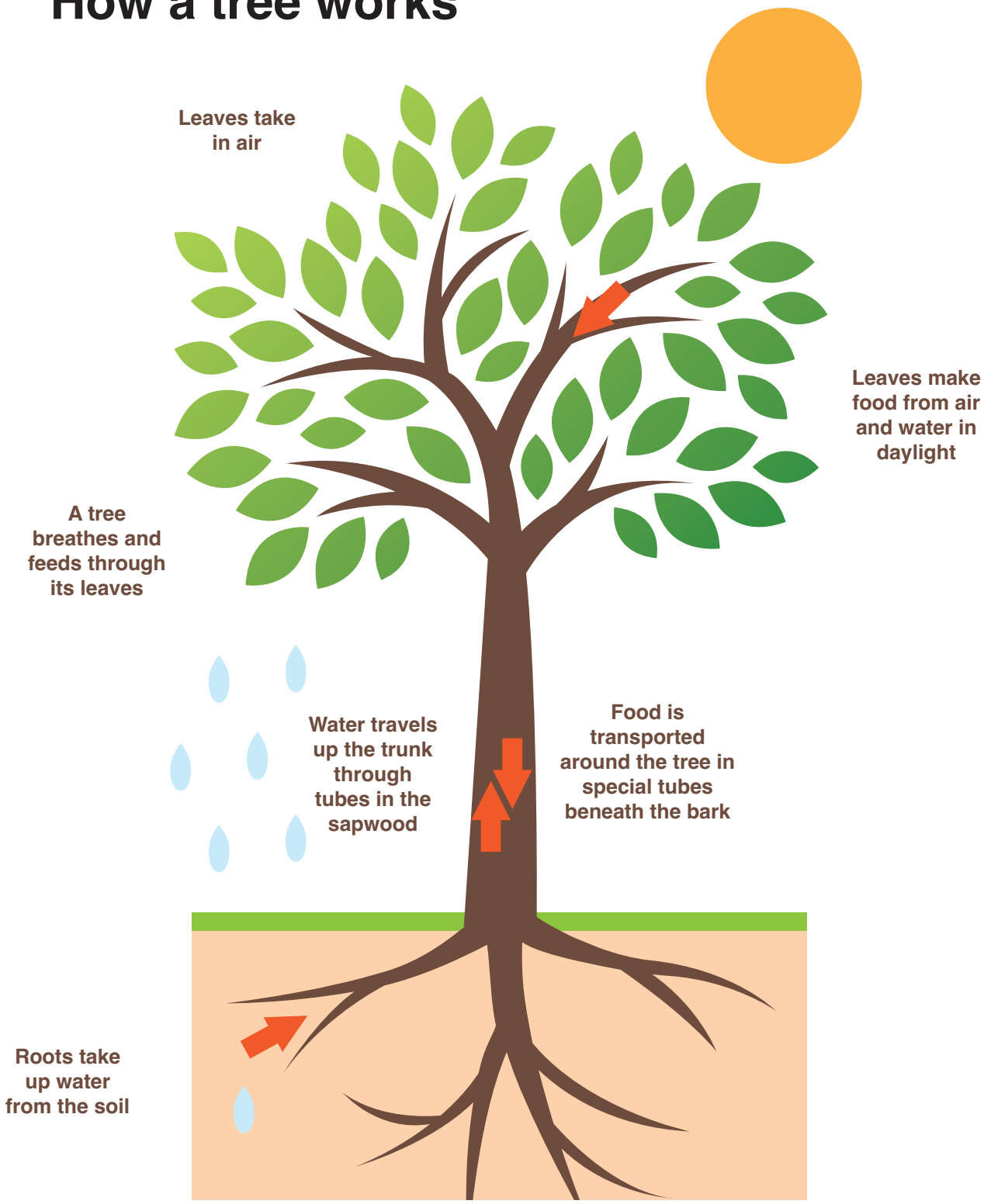
Plants require the carbon dioxide in air in order to perform photosynthesis. Plants take in carbon dioxide and release oxygen into the air.



Nutrients

Nutrients in the soil are dissolved into water in the soil. Nutrients are used for food, and are important during fruit, flower or vegetable production. Gardeners use fertilizers to add additional nutrients.

How a tree works



Trees are essential to life. They make a vital contribution to the energy cycle by their leaves capturing sunlight and turning it into food. Leaves contain a green substance called **chlorophyll** which captures the sun's energy and combine it with carbon dioxide, water and minerals in the leaf to make starches and sugars. This process is called **photosynthesis**. Water vapour and oxygen are given out as by-products, producing clean air for us to breathe. The food produced by the leaves enables the plant to grow. The amount of light, water and warmth available will affect plant growth.

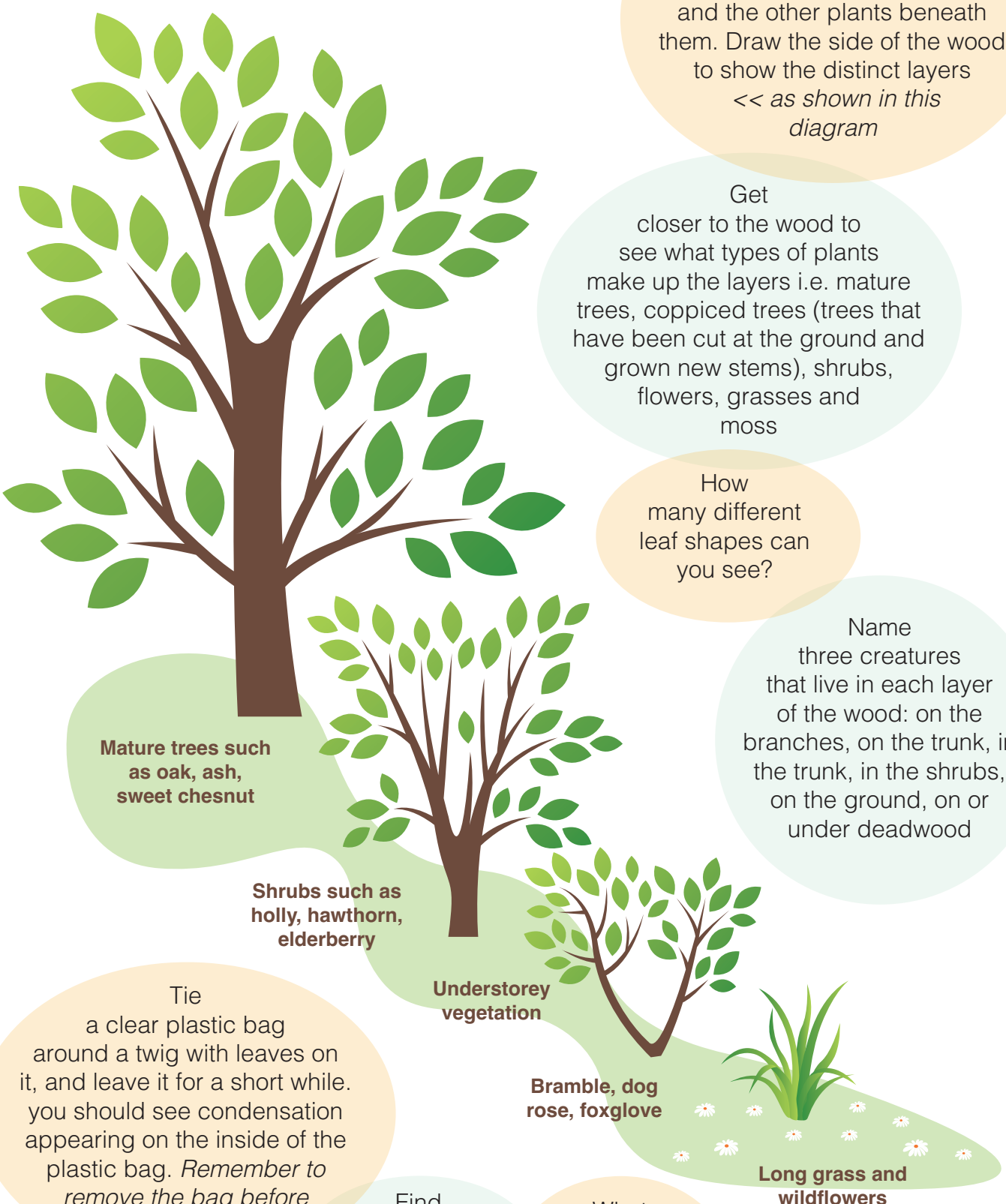
Woodland Communities

Look at a wood from the outside so you can clearly see the full height of the trees and the other plants beneath them. Draw the side of the wood to show the distinct layers *<< as shown in this diagram*

Get closer to the wood to see what types of plants make up the layers i.e. mature trees, coppiced trees (trees that have been cut at the ground and grown new stems), shrubs, flowers, grasses and moss

How many different leaf shapes can you see?

Name three creatures that live in each layer of the wood: on the branches, on the trunk, in the trunk, in the shrubs, on the ground, on or under deadwood



Tie a clear plastic bag around a twig with leaves on it, and leave it for a short while. you should see condensation appearing on the inside of the plastic bag. *Remember to remove the bag before you leave!*

Find something which helps wood to decay

What does a tree need to live and grow?

ACTIVITY 4 TREE MEASUREMENTS (KS1 & KS2)

INTRODUCTION:
This activity aims to teach children how to work out the age/size of a tree.

MATERIALS:

KS1 Pencil, tape measure

KS2 Pencil, tape measure, clinometer

INSTRUCTIONS FOR KS1

1. Choose a mature tree
2. Hold your pencil at arm's length and position yourself so that the base of the pencil lines up with the base of the tree and the top of the pencil lines up with the top of the tree
3. Turn the pencil so it's horizontal, with its base still in line with the base of the tree
4. Ask your friend to move from the base of the tree until they are in line with the top of the pencil
5. Measure the distance between your friend and the base of the tree. This will equal the height of the tree

Distance from your friend to the base of the tree = Height of tree

Height _____ (cm)

INSTRUCTIONS FOR KS2

1. If you want to apply some more accuracy, then use a clinometer as well as a tape measure
2. Again choose a tall tree and aim your clinometer at the top of the tree
3. Ask your friend to read the angle being recorded on the clinometer
4. Keep moving back (or forward if you've gone too far) until you have the clinometer angle measuring 45 degrees. With a 45 degree angle your job will be much easier as the distance from you to the tree will be equal to the distance from the ground to the top of the tree
5. Then get your friend to measure the distance between where you are standing and the base of the tree
6. Measure the distance from your eyes to the ground (this is where your partner is indispensable)
7. Add these two distances together - because to be most accurate the triangle has to finish at your feet not your eyes
8. You now have a very close approximation of the height of the tree

When clinometer is measuring 45 degrees:

Distance from you to the tree + your height = Height of tree

Height _____ (cm)

How thick?

You can find this out by measuring the girth of your tree at chest height.

Diameter at Chest Height (DCH) is a standard measurement for professional tree surgeons and forestry workers

Girth _____ (cm)

How old?

If you want to know the age of your tree, without being destructive and counting the rings, it's time to do some maths. On average trees grow 2.5cm, per year so a rough estimation can be made by dividing the girth by 2.5cm

Girth of tree (cms) ÷ 2.5 (cms) =

_____ Age of tree (years)

A) Find a leaf from your tree and draw or describe it

B) Do you know the name of your tree

_____

STAY SAFE:

Slips/trips and falls

While measuring the trees keep looking back down at the floor as you move.

ACTIVITY 5 WOODLAND BUG HUNT

INTRODUCTION

Woodland invertebrates may be different in terms of the general groups and individual species than in grassland habitats. They also require different survey techniques than in a grassland or freshwater habitat

MATERIALS

Tray, viewing pots, pooters, sticks for beating, white sheets

INSTRUCTIONS

Students should be encouraged to use a plastic spoon to pick up creatures as some minibeasts are very delicate.

LOG TURNING - A great variety of invertebrates live in the leaf litter and under logs and stones. Organise your group into pairs and give each pair a magnifier pot and spoon. Ask the students to search under logs and stones for invertebrates. The creatures found can be scooped up with the spoons and placed in pots. Remind the students to put back the logs exactly as they found them and after examining the creatures the invertebrates should be place back under logs. A number of different creatures can go in one pot but large snails and slugs are best in pots by themselves as they will produce a lot of sticky slime that can cover and harm the other creatures.

TREE BEATING - This method can be employed to see what creatures live in the canopy of the trees. Equipment needed: a beating sheet, magnifier collection pots and spoons. To do tree beating one student holds a beating sheet under a branch of a tree or a bush whilst another person vigorously shakes a branch. Any creatures on the branch will fall on to the beating sheet. The creatures disturbed tend to be fast moving ones like spiders or flying ones like lacewing

STAY SAFE

- The students should lift and replace logs carefully, watching out for fingers and toes.
- Larger logs should be lifted by adults only.

REVIEW

LITERACY - students could write a story as a minibeast living in the wildlife area.

ACCOUNT OF TRIP - non-chronological report writing about the creatures found in the woodland. This could tie in with other topics such as food webs and adaptations.

ACTIVITY 6 TREE RUBBINGS

INTRODUCTION

Bark and leaf rubbings can be a simple way to collect the many interesting patterns. Make sure it is dry or the paper will tear.

MATERIALS

- Large crayon or coloured chalk
- Thin paper
- Trees
- Notebook
- Pen

1.: Use a large crayon or a thick piece of chalk. If the crayon is new you may need to peel off the paper
2. Press a sheet of paper up against the bark of a tree.
3. Gently rub the side of the crayon or chalk on the paper until the pattern of the bark shows.
4. Compare rubbings from different trees. Which bark patterns make the nicest rubbings? Can you tell which rubbing came from which kind of tree?
5. If you want to keep a collection you can glue your rubbings in a scrapbook to make a "Bark Book". If you're feeling inspired you can do some research include some interesting facts about the trees

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STAY SAFE

- Look out for branches and broken bark.
- Objects stuck in the tree and rubbish below it.

REVIEW

The same method can be applied to leaves.

ACTIVITY 7 FUNGI TRAIL

INTRODUCTION

Autumn is the time for one of nature's great spectacles at Holywells Park - the annual appearance of thousands of different fungi, from the mushroom-like fly agarics on the woodland floor to brackets on tree stumps and deadwood. Use this simple ID guide to help spot some of the elusive autumn visitors that appear in our woods from September until the first frosts.

Fungi like damp places, so look carefully as you walk around our woods. Many are shades of brown, but can also be more colourful. Check the dead leaves carpeting the woodland floor and pay special attention to any dead wood, rotting tree stumps and log piles.

Some fungi have gills underneath; others look like sponges. Fungi are not plants but belong to a unique group which stands completely on its own.

MATERIALS

Basic ID sheet

INSTRUCTIONS

1. Walk around the park in the autumn
2. There are two key types of fungi you are likely to find, brackets and mushrooms

STAY SAFE

- Do not touch or eat the fungi/mushrooms

SUPERVISION

List dangerous species and make students aware.

BASIC FUNGI ID SHEET

Grassland

INTRODUCTION

Holywells Park

Holywells Park has a good mixture of grassland habitats including acid, neutral, and marshy and amenity.

The plant life that grows in a meadow depends on the management, the light levels, soil nutrients and moisture. Typically the most flower rich meadows are on shallower soils with annual cutting or grazing. The removal of grass competition allows more space for different flowers to grow. Cutting after the flowers have seeded ensures a better show of flowers the following year.

Pollination

Plants produce flowers to make seeds. To make a seed, a flower must be pollinated. Pollen from the male part of one flower travels to the female part of another flower where the seeds are made. Most, but not all, plants have both male and female parts inside one flower. The stigma is usually in the centre and the stamens, which produce the pollen, cluster around it. The petals act like an advertisement to attract insects such as bees or butterflies which will carry the pollen from one flower to another. These insects are collectively known as pollinators and obtain a sugary drink from the plant's nectary in exchange.

Pollination provides an important ecosystem function. Without pollinators the majority of plants would slowly die out. Even more quickly would be a food shortage as crop yields would be devastated.

Succession

Succession is the process of change in the species structure of a habitat. There are three phases of succession - pioneer, intermediate and climax. Without a form of management, any habitat will shift towards a climax state (although this may take centuries). The best grassland for species diversity is at an early intermediate stage. The best way to maintain this is with annual mowing and the removal of saplings.

ACTIVITY 8 BUG HUNT

INTRODUCTION

This activity is a fun way for kids to be both active and investigate the insects found in different habitats.

MATERIALS

Sweep net, magnifier, collection pots, spoons and a tray.

INSTRUCTIONS

1. For grassland minibeasts, a sweep net is needed
2. For woodland minibeasts, the best method is a plastic spoon
3. This method is suitable for finding out what invertebrates live in long grass, stinging nettles and other soft vegetation
4. Using a sweep net, a student makes broad, long sweeps of the net through long grass or nettles. After sweeping, the inside of the net can be examined for creatures.

STAY SAFE

- Keep a safe distance between students so no one can be hit by the net when sweeping
- Avoid sweeping near thorny plants as these will catch on the net.
- If sweeping through nettles, be careful examining the contents as there may be bits of nettles or thistle inside the net.

REVIEW

Describe your minibeast to a colleague without telling them what it is. Note how many legs your creature has, how it moves, its colour, what it eats, where it lives, if it has wings etc.

The best way to find things is to walk slowly and quietly and look very hard, as things are very small and well camouflaged. Creatures try and hide by blending into their background to avoid being eaten for dinner. Brightly coloured insects are warning predators that they are poisonous or can give a nasty sting.

ACTIVITY 9 FLOWER TRAIL KS1

INTRODUCTION

This activity is aimed at KS1. Flowers are being grouped by key features and colours but not at a species level.

MATERIALS

Basic flower ID chart

INSTRUCTIONS

1. Find an area of flowers. An area with both short and long grass side by side would be best
2. Each time you find a flower, try and match the shape with the colour then tick the respective box
3. See how many flower classification boxes you can tick

STAY SAFE

- Slips, trips and falls
- Keep a safe distance between students

REVIEW

What were the most common colours? In the spring, blues and yellows are more prevalent, whereas in the summer you'll see more pinks and purples.

How did the flower shapes and colours vary in different habitats?

Can you spot any insects visiting your flowers?

BASIC FLOWER ID CHART

	White	Yellow	Pink	Purple	Blue	Red
 4 Petals						
 5 Petals						
 Daisy Shaped						
 Bell or tube Shaped						
 Pea Shaped						
 Umbrella Shaped						

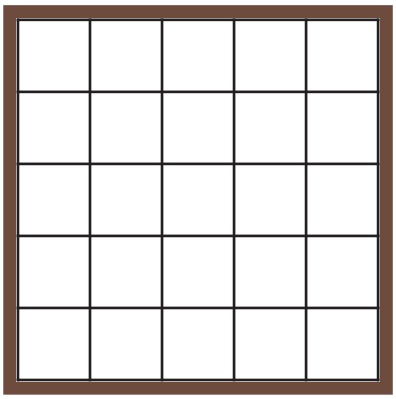
ACTIVITY 10 FLOWER TRAIL KS2

INTRODUCTION

This activity is suited for Key Stage 2 children. If you are able to identify individual plants you can start to work out the amount of each species.

It would be impossible to count all the plants in a habitat, so a sample is taken. A tool called a quadrat is often used in sampling plants. It marks off an exact area so that the plants in that area can be identified and counted.

A quadrat is usually a wire square. It may contain further wires to mark off smaller areas inside, such as 5 x 5 or 10 x 10 squares. The organisms underneath, usually plants, can be identified and counted. It is most useful for estimating a percentage cover by looking at the number of grid squares covered.



MATERIALS

Quadrat, notepad, pen, ID sheets

INSTRUCTIONS

1. Take your quadrat and place it randomly so that a representative sample is taken
2. Make sure you take multiple results from several quadrats in an area to reduce the effect of distribution
3. Only record plants which you are able to identify
4. The results are more reliable when you look at the results from many quadrats
5. Other measurements that can be taken include vegetation height and bare soil
6. If you're feeling mathematical, work out the mean coverage of each plant by dividing
   the percentage cover at each sample by the number of samples taken
7. You will probably see that some plants are more prevalent in certain areas? Think of five reasons why this might be (hint- plants and trees need five things to grow)

STAY SAFE

- Sunburn, pollen and insect allergies, and dehydration.
- Quadrats have corners so be careful when carrying them.

REVIEW

Make a classification key with the plants you have found.