Environmental Influences on Plants and Animals

Read the following information to find the answers to the questions in the pictures.

A. General Information about Woodlands.

There are two main types of woodland in England:-

1. Broad-leaved woodlands.

These are mostly found in areas which are warm in the summer and cool in the winter with rain most of the year. All of England's ancient woodlands are broad-leaved woodlands – these are areas where trees have been present since at least the Sixteen Hundreds. Nowadays, many people are planting new broad-leaved or mixed (with conifers as well) woodlands to increase the amount of woodland in England.

Broadleaved woodlands consist of trees such as oak, ash, birch, beech, sycamore, poplars, wych elm, willows, wild cherries and chestnuts with shrubs and bushes such as hazel, hawthorn, blackthorn and holly. All of these trees have broad, flat leaves which have a large surface area for catching sunlight.

Most of these trees lose their leaves in winter – they are deciduous. Deciduous trees lose their leaves in winter because there is not enough water, light or heat for the leaves to photosynthesise. Water may be trapped as snow or ice in many countries where deciduous trees are found. Water loss is also a problem for broad-leaved trees in the summer time. Some trees, like alder and willows, are only found near streams or rivers. Other ways of reducing water loss include

a) having hairs on the leaves – the hairs trap the water close to the leaf reducing the rate of water movement out of the leaf (transpiration).
b) having a waxy or leathery surface to the leaf reduces the amount of water leaving the leaf.
c) having a thicker leaf – this reduces the amount of surface area to volume, thus reducing the rate of water loss.

The deciduous trees grow their leaves during the spring, when the days are longer and the temperatures warm up. Spring is also a good time to listen to birds singing – they are all trying to find mates. You may see birds and squirrels collecting moss, animal fur, leaves and twigs to make their nests and dreys at this time of year. By June, the trees have all their leaves and when you walk through the woodland it is much cooler and darker than open areas.

There are some evergreen trees (trees that keep their leaves all year round) in Broad-leaved woods – holly, yew and Scots Pine – are all native to England.

Many other plants grow under the larger trees and shrubs. In the springtime; from March to May, you will often see many flowers such as snow-drops, bluebells, wood anemone and wild garlic growing in broad-leaved woodlands. They have to grow and flower early before the trees grow their leaves and block out most of the sun.

Brambles, ferns, bracken and grass may also grow under the broad-leaf trees, so long as there is enough light reaching the forest floor – even in the height of summer.

2. Conifer Woodlands

Natural conifer forests are found in more mountainous and colder parts of the UK, often in areas where the soil has few nutrients.

In the last 100 years or so, most of the commercial plantations (areas where trees are planted for us to make use of the wood) used conifer trees introduced from Europe (eg Norway Spruce and Larch) or North America (Sitka Spruce, Western Red Cedar and Douglas Fir). There are conifer plantations throughout the England, though most are in hilly areas of northern England, where the soil is poor in nutrients.

Conifer means 'cone bearing'. Historically, the only conifer species in the UK was the Scots Pine. Yew and Juniper trees are actually conifers – the fleshy part of the berry has developed from scales and the seed is always visible inside the berry.

Most conifers keep their leaves all year round and are also known as Evergreens. The only conifer species in England to lose its leaves in the winter is Larch. Conifer trees keep their leaves all year round so that they don't lose all the nutrients in the leaves and can still make food (photosynthesise) on sunny, warmer days in the winter months.

Conifer leaves, or needles, are specially adapted to reduce water loss. They are long and thin, with a waxy surface. This reduces the rate of water loss through the leaf.

Conifer needles are often dark green – they have lots of chlorophyll in – so they can photosynthesise even when there is not much sunshine.

If you walk through a conifer plantation, it is often very dark underneath as the trees are planted close together to encourage them to grow nice and straight. The trees are mostly the same species and the same age and height. The branches have lots of leaves on, effectively blocking out the sun. Very little can grow under these trees and often all you see is fallen pine needles.

Some plantations and natural Scots Pine forests have a more open canopy and a mixed age of tree. Sunlight reaches the forest floor allowing young pine trees (saplings) and broadleaved trees such as holly, hazel birch to grow under this along with plants like blueberry and bracken.

The soil underneath conifer trees is often quite acidic – this is partly due to the acid nature of the pine needles when they decompose. Many plants can't grow on acid soil.

B. General Information about Woodland Wildlife

Woodlands are home to many different types of animal – here we will talk about some woodland birds and mammals.

Woodpeckers find a lot of their invertebrate food in dead branches or dead trees. The invertebrates live in the dead wood, helping the dead tree to rot away. The woodpecker hammers with its beak making holes in the dead wood and digging out the insects underneath. Woodpeckers also make holes in living trees where they will have their nest.

Broad-leaved forests tend to have more different types of bird than conifer plantations in England. This is because there is usually more food for the birds – for example berries or invertebrates – in the broadleaved woodland. If you walk through a broad-leaved woodland you may see birds such as blue tits, great tits, nut hatches, tree creepers, greenfinches, robins, chaffinches, wrens and owls.

The crossbill is only found in conifer forests because it only eats the conifer seeds cones – its bill is specially adapted to take the seeds out of conifer.

Grey squirrels are larger than red squirrels – about twice the size. They need a lot more food too. Broad-leaved forests have a greater range of food supplies than many conifer forests, especially conifer plantations and many of the broad-leaved trees have large seeds or berries. Grey squirrels evolved in broad-leaved forests on the east coast of America where they had to compete for food with 3 other species of squirrel. As a result they are very good at getting lots of energy from nuts and berries and can even digest acorns which have tannin in; this tannin is poisonous to many animals including horses and red squirrels.

Other animals find woodlands a good place to live too. Badgers often make their homes in deciduous woodlands because there is a lot of food – berries, seeds, nuts and invertebrates – and there is good cover for the badgers to move around without being seen. This is especially important in the summer when the badger cubs are young and come out to play.

Woodlands of all types can provide shelter for animals in the winter from the wind, rain and snow. Some herbivores (animals that only eat plants) like deer and wild ponies like to eat tree leaves, nibble on young shoots or trees and even peel bark off the trees.

Given a choice, red squirrels will make their nests (or dreys) in conifer trees with a dense canopy. Squirrel dreys are look like a ball of twigs, up to about 2ft across, tied into branches next to the tree trunk. An evergreen canopy above the drey provides year round protection from aerial predators such as goshawks or buzzards and protects the drey from heavy rain or snow. Deciduous trees don't provide such good cover in the winter.

Pine martens are one of the natural predators of red squirrels, though they are now very rare in England. Pine martens also eat other small mammals, invertebrates and birds eggs. They are usually found in conifer forests in England as there is lots of cover and food for them, however they will live in other forests too.