Brede High Woods

Educational Resources

Discovering Wildlife in Winter

Unit in brief

Session aims:

To explore the variety of wildlife found within the habitats of Brede High Woods and to understand the relationships and interactions within the ecosystems.

Curriculum Links

Science Key Stage 2 –
Living things in their environment - variety in nature and classification, food chains, pyramids and webs, animal body parts and movement, decomposers, Key Stage 3 the carbon cycle, competition between species, how humans effect the environment.

English Key Stage 2 –
Speaking using imaginative and scientific vocabulary.

Drama Key Stage 2 –
Create and perform actions and roles as a group and evaluate performances.

Physical Education Key Stage 2 –
Outdoors adventurous activities, working individually, and as pairs, and within teams to complete challenges.

ICT Key Stage 3 –
Finding information, refining research methods, and checking accuracy of information.

Art and Design Key Stage 2 –
Drawing to express information.

Structure	Activity title	QCA Curriculum links	Teacher notes	Student worksheets
Introduction	Unit in brief		1	None
Pre-visit activities	Which wild animal am I?	**KS2:** Sc2, 1.a.c, 2.a.b.e, 4.b, 5.b.d.e	3 4	None
On-visit activities	Brede High Wood Winter Investigators	**KS2:** Sc2 3.d, 4.a.b.c, 5.a.b.c.d.e.f Hi7 PE1 1.a.b.c **KS3:** PE3.e	5	Brede High Wood Winter Investigators booklet *(to download seperately)* 6

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Discovering Wildlife in Winter

Structure	Activity title	QCA Curriculum links	Teacher notes	Student worksheets
	Decomposers	**KS2:** Sc2, 5.f **KS3:** Sc3, 4.a.c, 4.e	7	None
	"Listen to me"	**KS2:** En1.a.b.c, 2.a.b.e, 3.a.b, 4.b.c	8	None
	Food webs	**KS2:** Sc2, 5.d.e	9	None
	Animals on the move	**KS2:** Sc2, 2.e En4.a.b.c.d	10	None
Post-visit activities	Pyramids	**KS2:** Sc2, 5.d.e	11	Pyramids 12 13
	Food webs	**KS3:** Sc3, 3.d, 3.4.c	14	Food webs, worksheet, pictures and web 15 16
	Non-native species	**KS3:** Sc3.4.c ICT2.1.a.b.c.d, 2.3.a.b.c, 3.a	17	Non-native species 18

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

WHICH WILD ANIMAL AM I?

TEACHER'S NOTES

WHICH ANIMAL AM I?

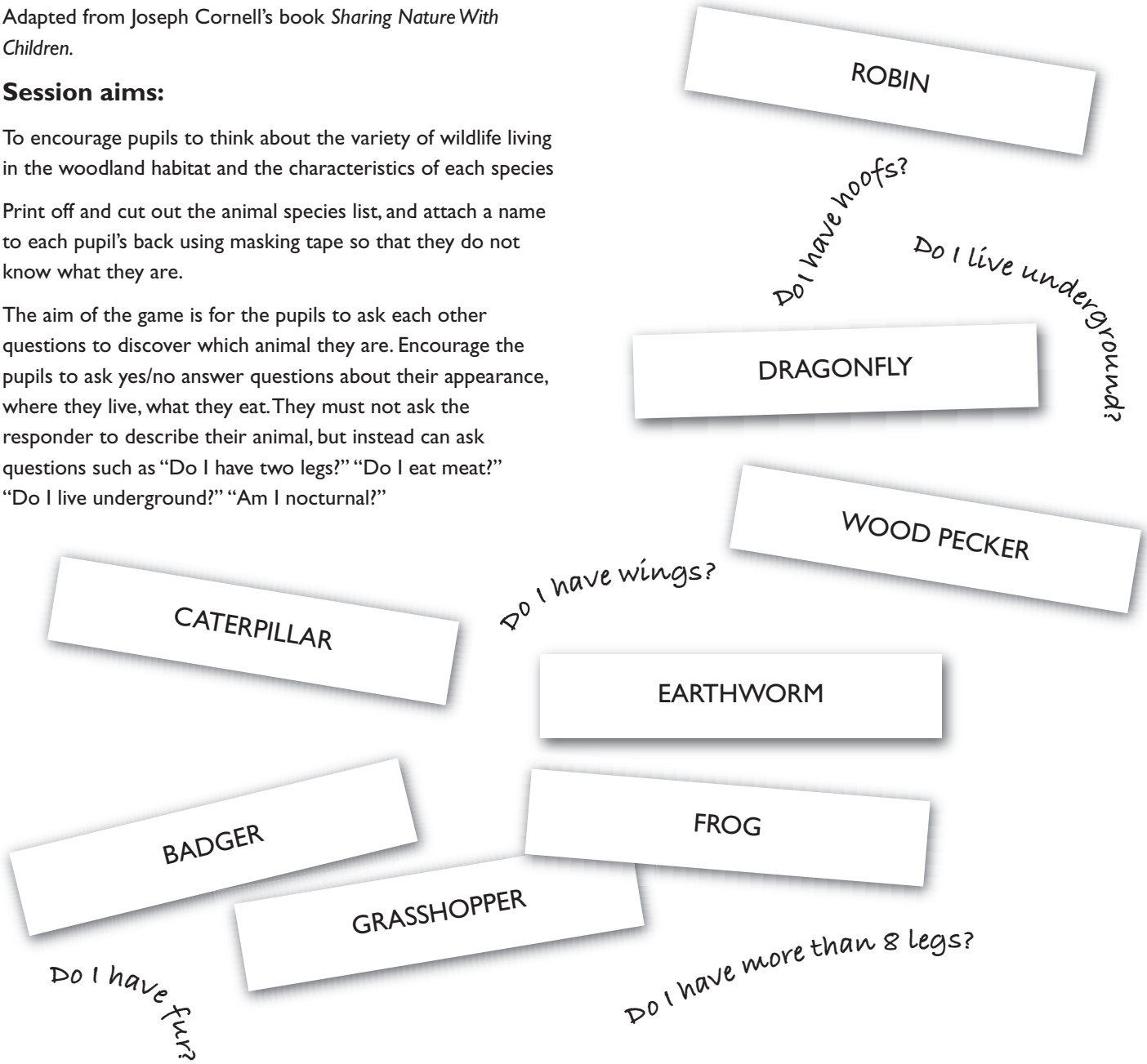
Adapted from Joseph Cornell's book *Sharing Nature With Children.*

Session aims:

To encourage pupils to think about the variety of wildlife living in the woodland habitat and the characteristics of each species

Print off and cut out the animal species list, and attach a name to each pupil's back using masking tape so that they do not know what they are.

The aim of the game is for the pupils to ask each other questions to discover which animal they are. Encourage the pupils to ask yes/no answer questions about their appearance, where they live, what they eat. They must not ask the responder to describe their animal, but instead can ask questions such as "Do I have two legs?" "Do I eat meat?" "Do I live underground?" "Am I nocturnal?"



Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

WHICH WILD ANIMAL AM I?

ANIMAL SPECIES LIST TO CUT OUT

DRAGONFLY	ADDER	FOX
BUTTERFLY	GRASS SNAKE	BADGER
BEETLE	COMMON LIZARD	STOAT
LADYBIRD	NEWT	RABBIT
SPIDER	FROG	MOLE
CATERPILLAR	SNAIL	KESTREL
WOODLOUSE	SLUG	BLUE TIT
GRASSHOPPER	EARTHWORM	WOOD PECKER
ANT	DEER	ROBIN
MILLIPEDE	WILD BOAR	BLACKBIRD

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

BREDE HIGH WOOD WINTER INVESTIGATORS

TEACHER'S NOTES

Session aims:

To encourage the pupils to look closely at the environment around them, and find out ways and methods of looking for wildlife, and about how and where wild animals live.

It is best to follow a set route and give the pupils a set amount of time to investigate. Remember that in winter it can be muddy underfoot so distances take longer. A circular route is best for this activity.

You can call the group together to discuss features and finds, and break up the walk using some of the other activities on decomposers, "listen to me" and food webs.

At the end you can discuss how often you found some of the evidence, and also what things you didn't find, and suggest reasons why, i.e. group too noisy, recent weather conditions etc. Also discuss some of the animals that are not on the list – those that are nocturnal (foxes, badgers) or hibernate (hedgehog, snail, slug, woodlouse).

What you will need:

Brede High Wood winter investigators booklet
Clipboard
Pencil

Brede High Woods

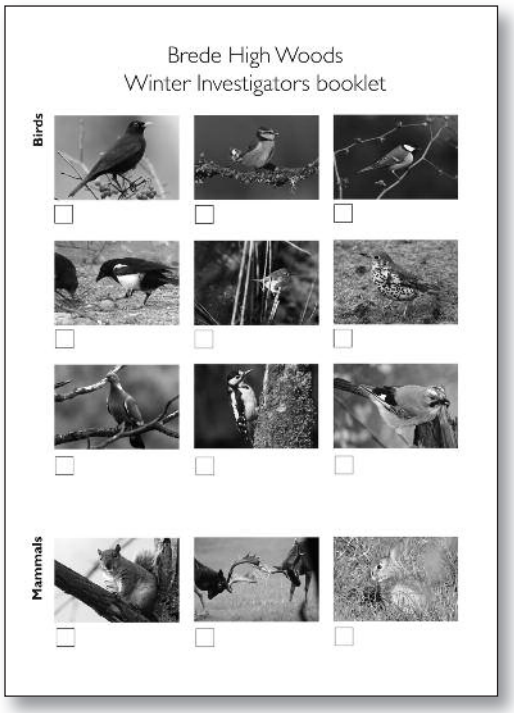
Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

BREDE HIGH WOOD WINTER INVESTIGATORS

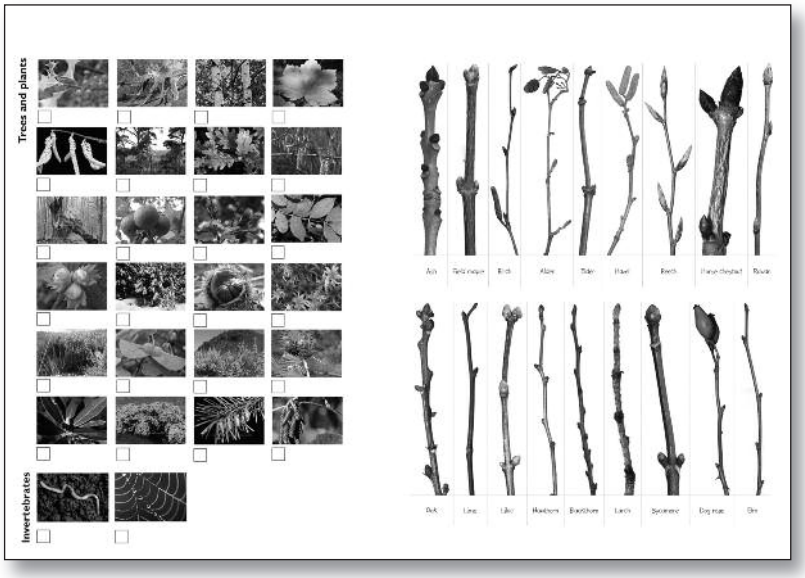
TEACHER'S NOTES

Your assignment as a woodland detective is to collect evidence of life past and present within the woodland and to report back to Mother Nature. Download the Brede High Woods Winter Investigators booklet to help you in your search.



Tips for tracking wild animals

- Wear dark/natural coloured quiet clothes that don't rustle as you move
- Walk carefully and avoid noisy surfaces
- Don't talk too loudly, or even better, be silent
- Heighten your senses
- Listen hard
- Look around you and use your peripheral vision (put your arms out to your sides and move your fingers as you move your arms back until you cannot see them by looking sideways without turning your head,. Bring your arms forward again until you can see you fingers).
- Look for things far away and up close. In the sky, trees and on the ground



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Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

DECOMPOSERS

TEACHER'S NOTES

Session aims:

To introduce pupils to the concept of decomposition and how it plays a vital role in the balance of nature and the carbon cycle.

Decomposers are organisms that consume dead organisms. In doing so they are breaking down the dead material performing the vital natural process of decomposition.

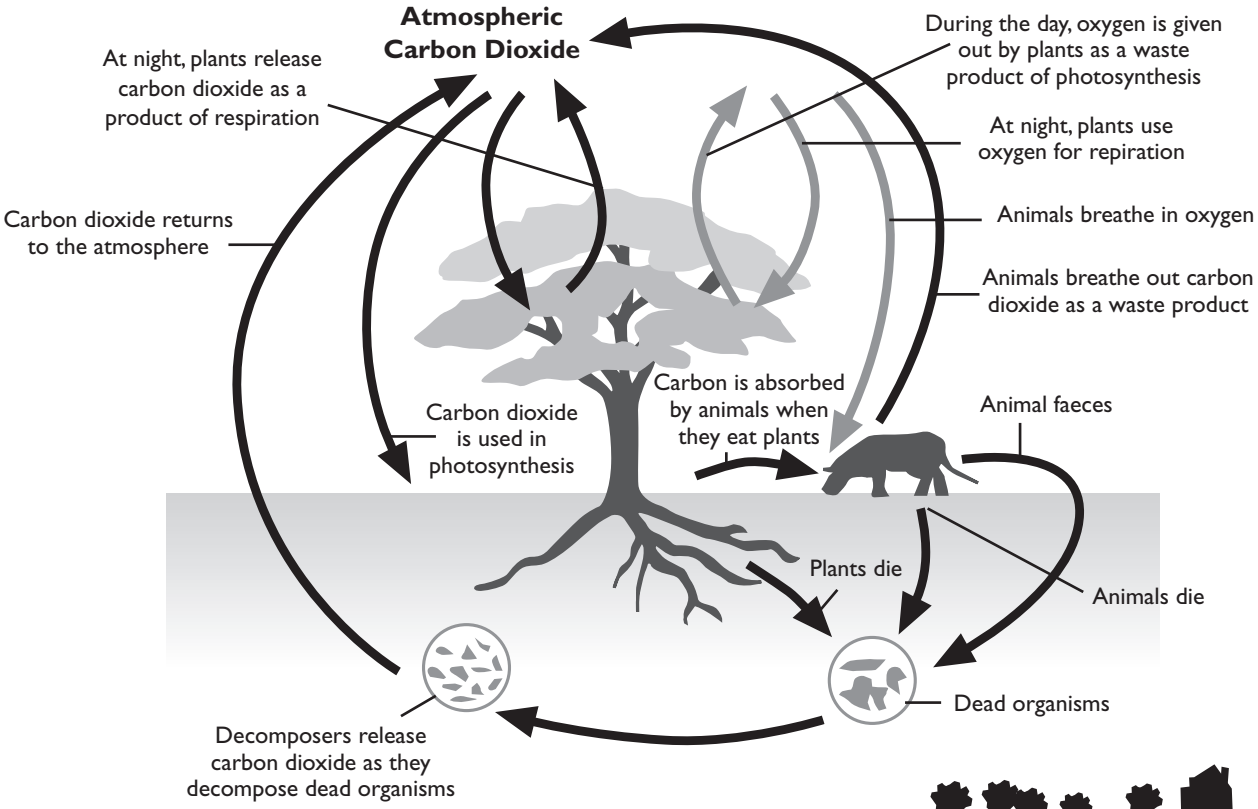
In the Wildlife Investigators Walk the pupils will have hopefully found some decomposers (depending on the season/weather) such as detritivores. eg woodlice, worms, millipedes, beetles, or springtails, and fungi breaking down wood and leaf litter. However, the primary decomposers are not visible to the naked eye, these are bacteria. All decomposers get their energy to survive from dead organic matter.

The twig snap test

Ask the class to collect from the ground ten small twigs each and come back to you with them. Discuss the roles of fungi and bacteria in breaking down wood and other organic material. Suggest to the class that wood is a strong material until the fungi and bacteria begin their work and start to eat the wood. Ask them to test with their twigs whether the decomposers have begun their work, by snapping the twigs with their fingers. Most will snap easily. You can then discuss how you might need to make the test fairer and improve it. Ask the class to imagine a world without decomposers, where no wood ever rots, and discuss decomposers role within food chains.

Key Stage 3 extension activity

Discuss the role of decomposers within the carbon cycle.



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Educational Resources

LISTEN TO ME

TEACHER'S NOTES

To encourage pupils to look closely at the environment and appreciate variety in nature using descriptive and imaginative language, working with fellow pupils.

The pupils need to be in pairs for this activity.

Pupil 1 leads pupil 2 a few paces through the habitat, pupil 2 has their eyes closed. Pupil 1 says, "Listen to me, I can see" and describes a natural object without saying its actual name, the description can be fantasy based. When they have finished speaking, pupil 2 can open their eyes and they must find the object being described.

Some examples;

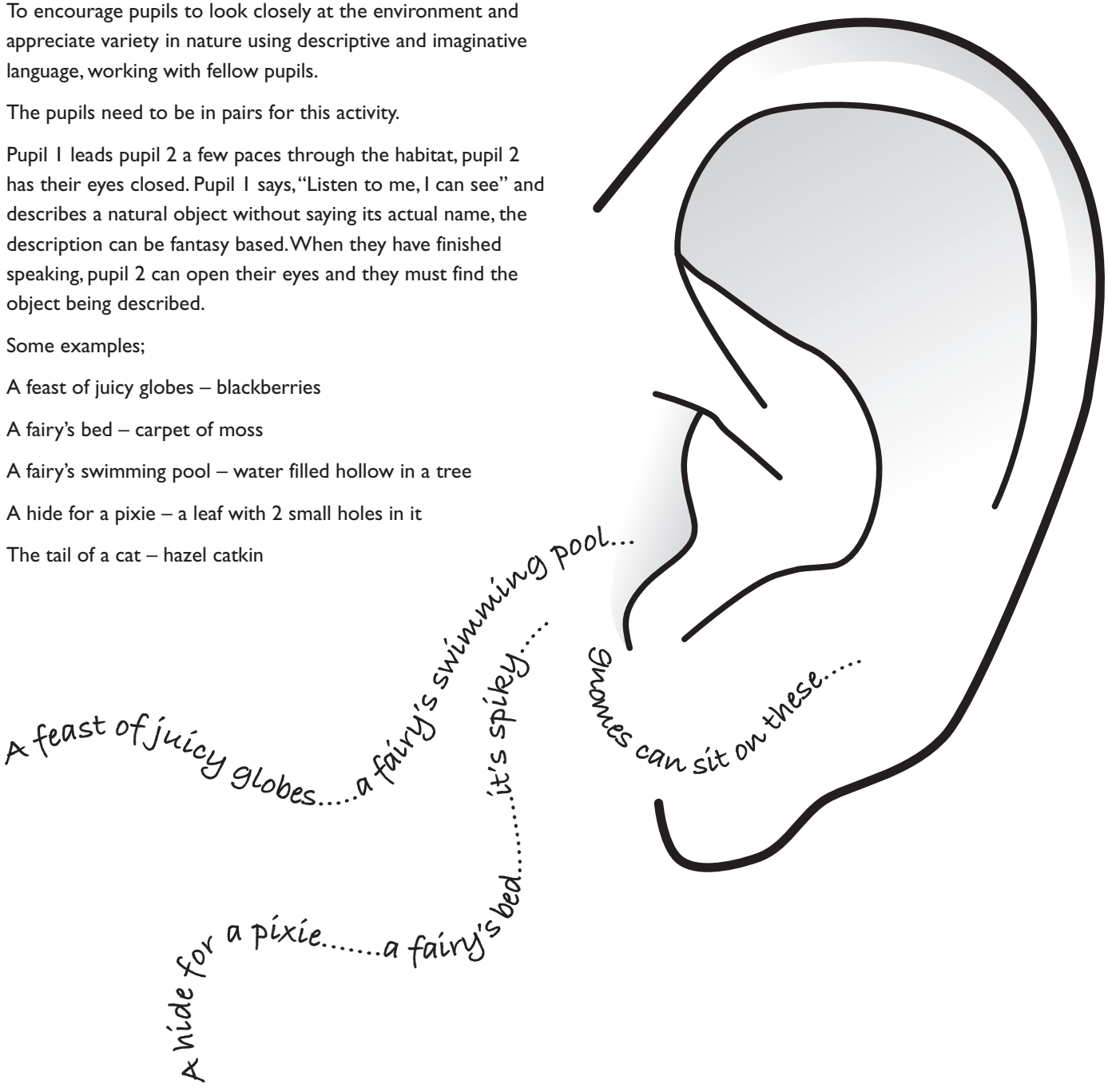
A feast of juicy globes – blackberries

A fairy's bed – carpet of moss

A fairy's swimming pool – water filled hollow in a tree

A hide for a pixie – a leaf with 2 small holes in it

The tail of a cat – hazel catkin



Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

FOOD WEBS

TEACHER'S NOTES

Adapted from Joseph Cornell's book *Sharing Nature With Children*.

Session aims:

To introduce the concept of food chains and food webs and the flow of energy and interactions between species in the environment.

You will need a large ball of string and an open space. You can, if you wish, make some appropriate cards to pass around for the food web game. This is helpful if you are short of time, otherwise a reference list to hand is always useful. To save time you can split the group in two, however you will need more string.

A bit about food chains

- Animals and plants are linked by food chains.
- Plants get their energy to survive from the sun, they make their own food, and they are sometimes called the producers.
- Animals get their energy to survive from eating plants and/or other animals.
- A food chain always starts with a producer; this can be a green plant or even a decaying plant.
- The feeding levels of a food chain are called trophic levels.
- Producers are the first trophic level.
- The second trophic level will be a plant eater, also called herbivore or primary consumer.
- The third trophic level will be a meat eater, also called carnivore or secondary consumer.
- Some food chains are longer than others; the forth and fifth trophic levels are usually where you will find the top carnivores that cannot be eaten by anything else.
- Some animals eat plants and other animals; these are called omnivores.

Ask the class to stand in a circle. Encourage the pupils to think about what they have seen as wildlife investigators and some of the animals they were using for the game "Which animal am I?" Tell them they will all need to stand still and hold the string tightly without tugging it.

Ask the first pupil to name a producer, and hand one end of the string to them.

Ask a second pupil across the circle to name an herbivore to feed on the producer, pass the string to him/her so it pulls tight between the pupils.

Ask a third pupil across the circle again to name a carnivore, pass the string to them.

Depending on the choices, continue this food chain with the next pupil, or start a fresh chain passing on the string each time. Try to spread out the chains around the circle.

As you continue, the pupils may exclaim that you are making a spider's web, but you are in fact creating a food web. Some pupils may query why each food chain is connected. ie a fox then leads onto an oak tree. Explain that although the flow of energy does not flow from the fox to the tree, the fox depends on the tree as part of the habitat it lives in, perhaps it's den is among the roots. Essentially the chains are linked together as they are all part of the same habitat.

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

ANIMALS ON THE MOVE

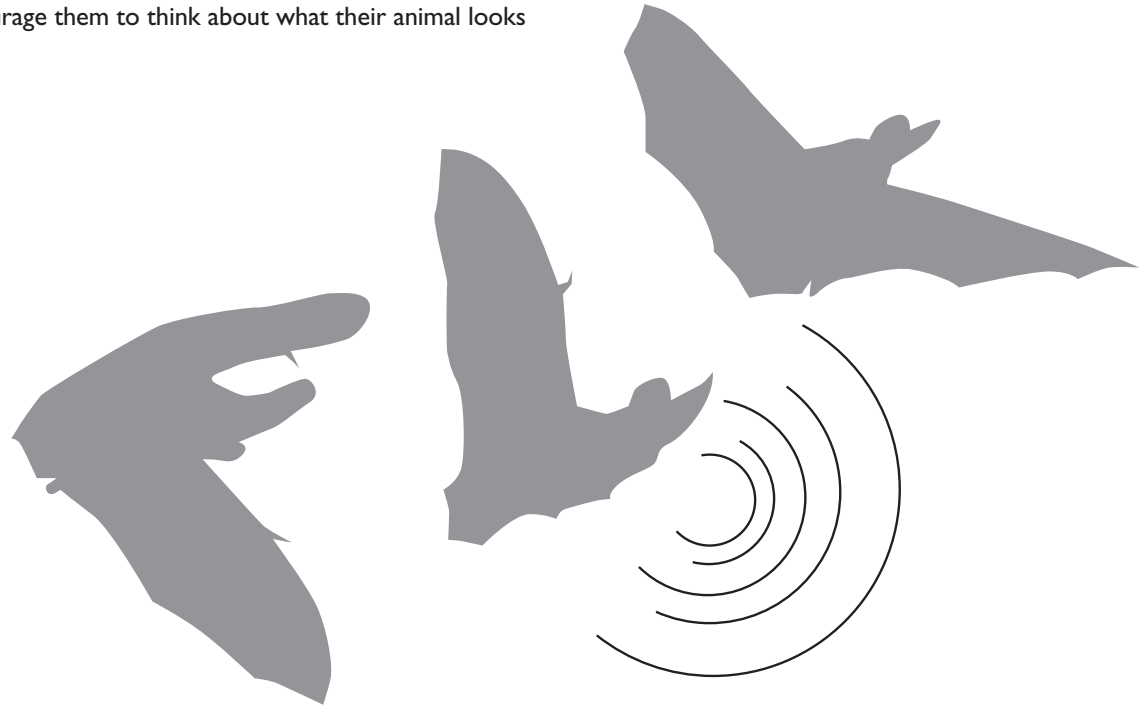
TEACHER'S NOTES

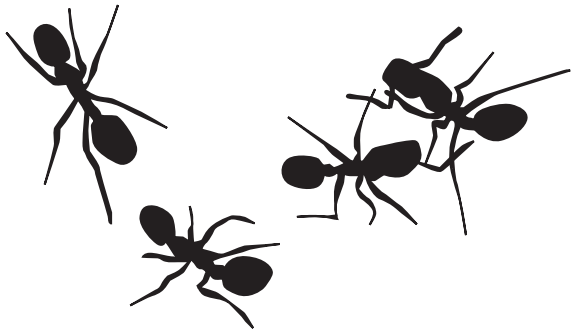
Adapted from Joseph Cornell's book *Sharing Nature With Children.*

Session aims:

To explore and appreciate animal features and characteristics, using role-play, team work and imagination.

You will have already mentioned a wide variety of animals within the course of you visit. Split the class into groups of 3s, 4s and 5s. Ask each group to choose an animal that you would encounter in woodland. It can be a mammal, bird, invertebrate, reptile or amphibian. Ask them to keep their choice secret. Now encourage them to think about what their animal looks like, and how it moves around the wood. What sort of walk/flight would it have, what mannerisms, ie would it be social or solitary, shy or confident, cheeky or preoccupied? Now ask the pupils to recreate the movement of the animal using their own bodies' moving altogether as one unit. Help the groups, where needed, as some cases may require the additional help of plant materials (a millipede might need the legs in the form of grass). Other cases might benefit if individuals play the role of individual animals (ie a colony of ants). Each group will perform their secret woodland animal to the class who will guess what they are.





Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

PYRAMIDS

TEACHER'S NOTES

Session aims:

To develop knowledge of food chains and introduce the concept of pyramids of number/biomass and energy.

Ask pupils to complete the pyramids worksheet and answer the questions.

Answers:

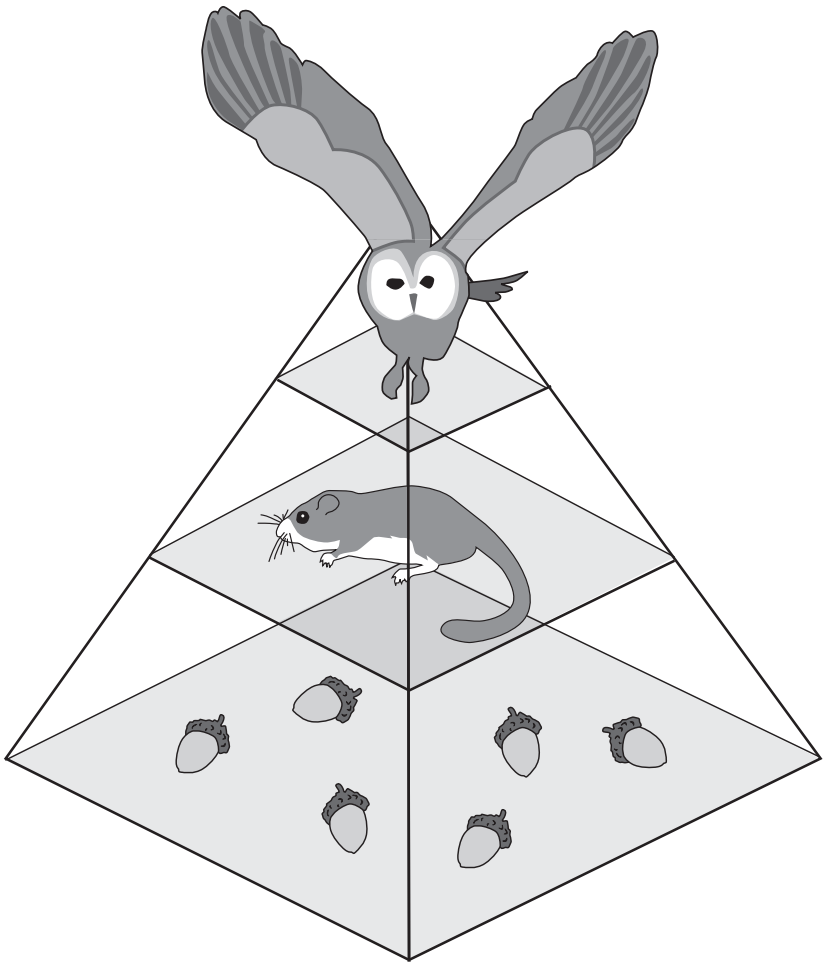
7. In summer a tree's biomass is greatest.

9. Energy is lost between trophic levels through, life processes such as growth, digestion and reproduction, and in waste.

10. Plant-based food contains more energy than animal based foods.

What you will need:

Graph and plain paper
Pencil ruler
Scissors
Glue



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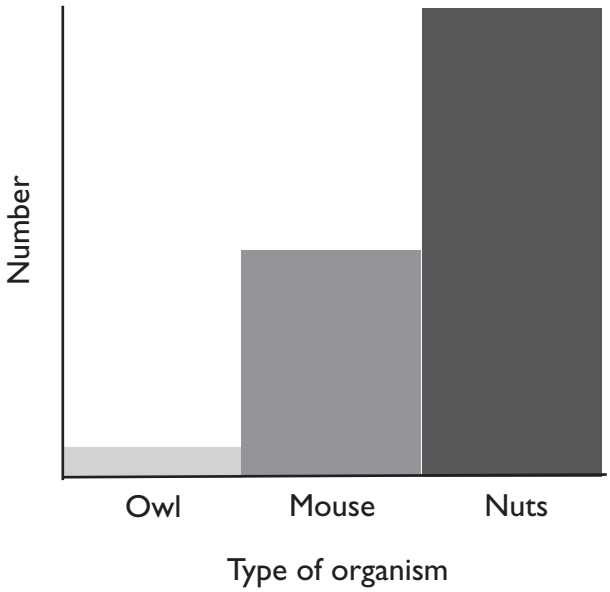
PYRAMIDS

WORKSHEET

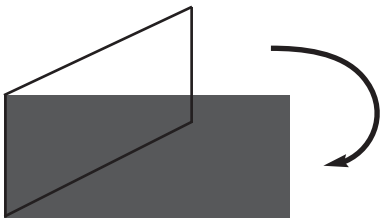
We can express the information in a food chain using pyramids to graphically represent the numbers/mass/flow of energy between the trophic levels in a community or ecosystem.

1. Use the data in this food chain to produce a bar chart.

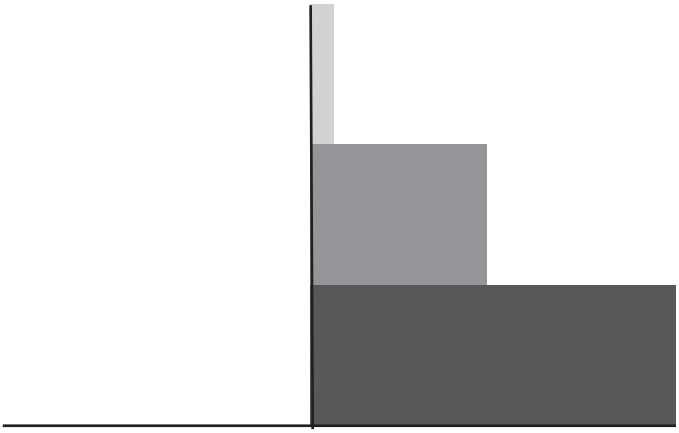
Owl	21
Mouse	949
Nuts	2,100



2. Cut out the bars from the bar chart and fold them in half.



3. Draw a set of axes, and place the folded pieces along the y-axis.



4. Unfold the pieces, cut along the fold and glue them down to form the pyramid of number.

5. Now repeat the tasks for the following food chain data.

Sparrow hawk	1
Blue tit	10
Caterpillars	100
Oak tree	1

Pyramids of number are not always pyramid-shaped. A better way to show the feeding relationship between the oaks, caterpillars and blue tits would be a pyramid of biomass, which takes into account the size of the organisms.

Brede High Woods

Educational Resources

PYRAMIDS

WORKSHEET

6. Use the following food chain data to produce a pyramid of biomass.

Fleas	40g/m^2
Foxes	100g/m^2
Rabbits	800g/m^2
Grass	5,000g/m^2

The drawbacks of measuring biomass is that it can vary throughout the season.

7. Which time of year is the biomass of an oak tree at its greatest?

The best way to show the feeding relationship between
the trophic levels in a food chain is to produce a pyramid
of energy.

8. Use the following food chain data to produce a pyramid of energy.

Swallow	67kj/m^2/year
Laybird	1,600kj/m^2/year
Aphid	14,000kj/m^2/year
Nettle	87,000kj/m^2/year

The nettle is getting 100 per cent of its energy from the sun, but not all the energy is passed from the nettle to the aphid. Similarly the aphid does not pass all its energy onto the ladybird or the ladybird pass all its energy to the swallow. The energy passed along the chain gets less and less as you go up the trophic levels.

9. If not all the energy is passed on between each trophic level where does it go instead?

10. Humans are omnivores, but which food would give you the most energy, plant-based or animal-based?

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

FOOD WEBS

KS3 TEACHER'S NOTES

Key stage 3 extension activity

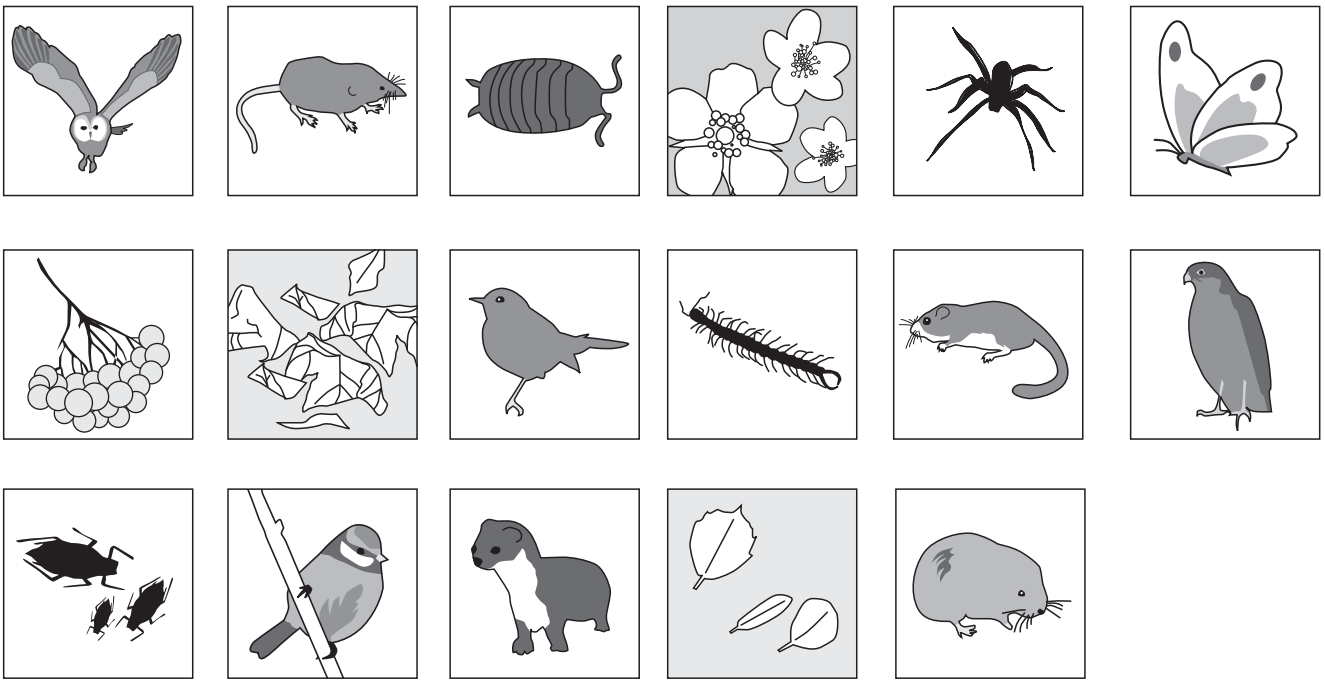
Session aims:

To teach about the complex feeding interactions between different species and how they are connected through a food web.

Ask pupils to complete the food web activity; this can be done in pairs.

What you will need:

3 Worksheets – Introduction, images and web
Scissors
Glue



Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

FOOD WEBS

KS3 WORKSHEET

Food chains are simple. They only show one pathway of the flow of energy between living things.

Often animals eat more than one type of food. This can be different plants or different animals. For example, a rabbit will eat grass and dandelions, a fox will eat rabbits and pheasants, a butterfly will get nectar from dandelions, but a fox will not eat the butterfly.

So food chains are not really as simple as a line of plant and animal names, because each of those living things can belong to more than one food chain. The living things live in a network of complicated relationships.

Food chains often only include the producers, herbivores and carnivores, but there are also the omnivores and decomposers to consider.

Food chains can be linked together to make a food web. The plants and animals are linked together with arrows to show the directions the energy is flowing between them.

Now complete the Food Web by cutting out the pictures below and arranging them onto the web on the next sheet. Check with your teacher before you stick down the pictures.

✓ *Remember it is not always a case of who eats whom, energy will still be found in the leaves that have fallen from the tree, otherwise how would the decomposers survive?*

✓ ***Hint:*** *it is best to start with your top carnivores as you know nothing else will eat them, so they will only have arrows going towards them. Then work your way downwards thinking about what animals they can eat. (A shrew is a carnivore).*

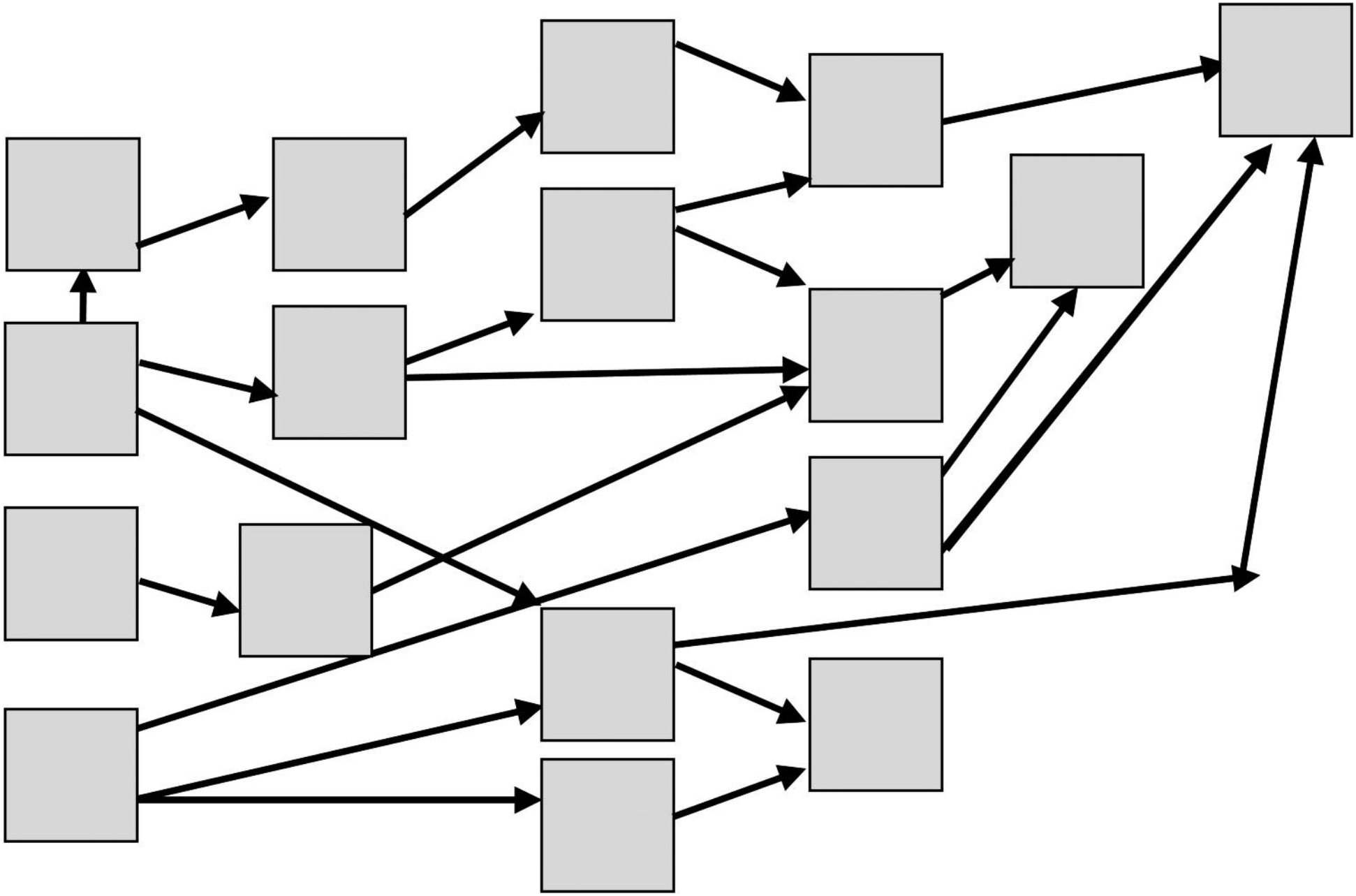
Brede High Woods

Educational Resources

FOOD WEBS

KS3 WORKSHEET

Pre-visit activity
On-site activity
Post-visit activity



Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

NON-NATIVE SPECIES

TEACHER'S NOTES

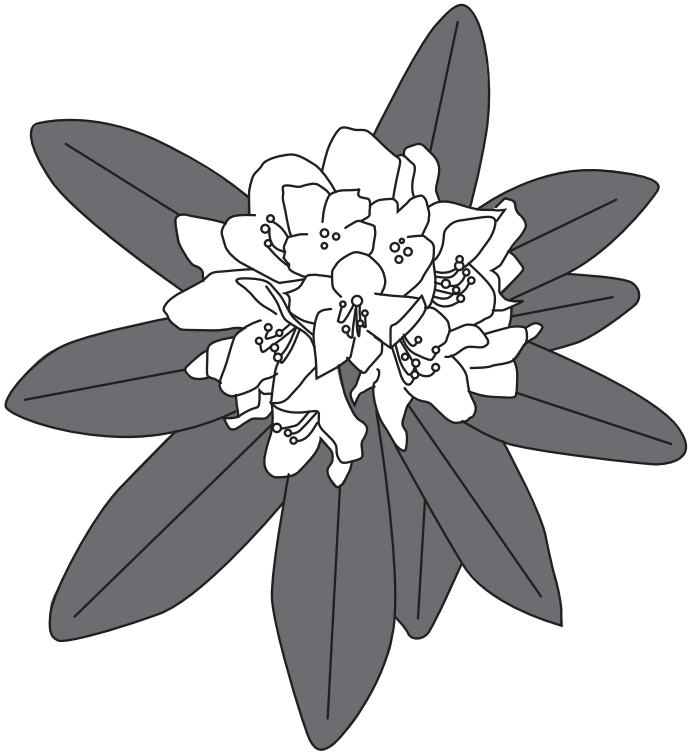
Key Stage 3

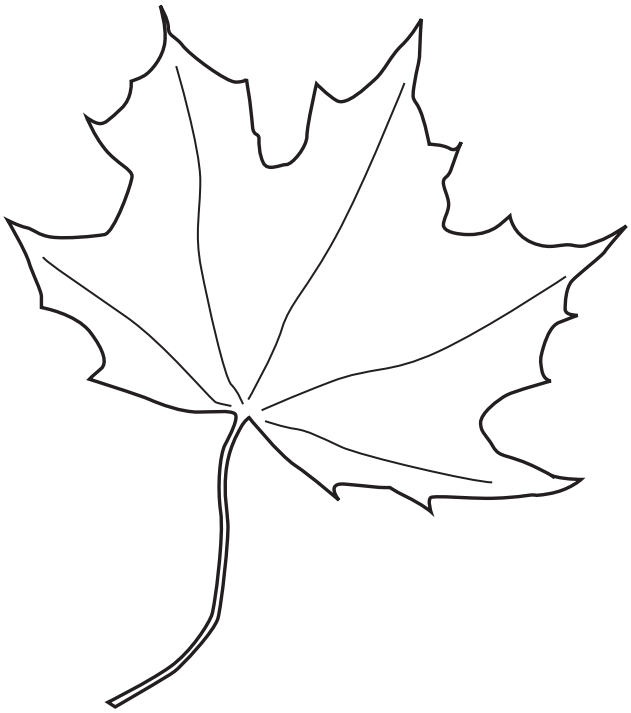
Session aims:

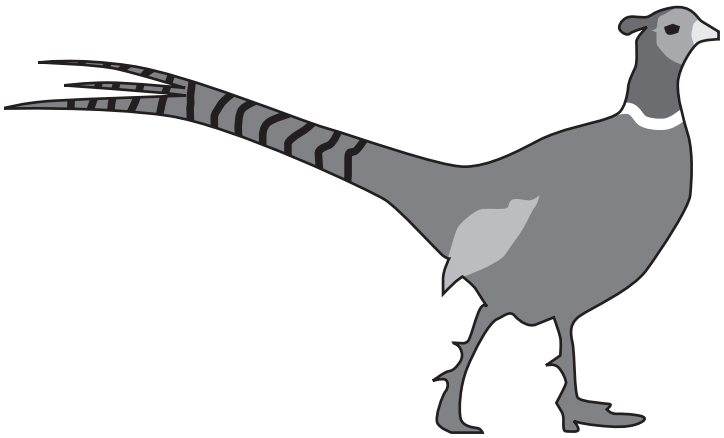
To increase awareness of the impacts that non-native species have on the British countryside

What you will need:

The Non-native species worksheet







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Pre-visit activity
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NON-NATIVE SPECIES

KS3 WORKSHEET

Read the following information and complete the task below.

Animal and plant species from other countries often find their way into the UK. Being an island only a few species will make it here naturally, these are highly mobile species like birds and some butterflies.

People have introduced other species in the past, so long ago that they are now considered to be naturalised species. Many people think some of these species are part of our native flora and fauna, such as the pheasant, sweet chestnut, fallow deer, little owl and the grey squirrel.

Some species have made it into the wider countryside by accident, such as the ring necked parakeet, North American crayfish, harlequin ladybird and mink, which have all escaped from farms and zoos. Some plants have escaped over the garden wall such as the rhododendron, Himalayan balsam and Japanese knotweed. Some animals and plant seeds have made it here through our transport network and even on the soles boots, such as the American rosebay willow herb, whose seeds arrived here on American soldiers' boots and were spread along railway lines in the wind all the way into Scotland.

There have been attempts to re-introduce some species that have been made extinct in the UK in the recent past, such as the wild boar, beaver, common European crane, red kites and white-tailed eagles. Other re-introductions are under consideration such as the wolves, lynx and bears, but these are obviously more controversial with concerns for public safety.

Some of these non-native species do not cause any problems to the countryside, where as others cause huge problems. We call these species invasive species.

You may have come across some non-native species during your visit to Brede High Woods, or perhaps simply evidence of their presence. There are a number of non-native plants in Brede High Woods, some are the remaining plants from old gardens such as the privet that grows round the old Keepers Cottage site, but by far the biggest problem plant is the invasive rhododendron. There are also fallow deer in the woodland, a naturalised species that has no natural predators in the UK and whose population nationally exceed 2 million. Although the deer are naturalised, and not necessarily considered invasive, their large and increasing populations can also be a problem. There are also wild boar in the area, which are farm escapees, wild boar were however once native in Britain before they became extinct, but again with no natural predators they could prove to be a problem in large numbers.

Task

Using the internet to research each of the following and make a spider diagram of information for each.

- One of the non-native species found in Brede High Woods.
- One other invasive species found in Britain.
- A successful species re-introduction in Britain.

Now choose one of the species and produce a poster highlighting the key information.