Aston Rowant National Nature Reserve

Environmental Education Pack

www.naturalengland.org.uk

NATURAL ENGLAND

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Welcome to Aston Rowant!

About the site

This National Nature Reserve (NNR) lies in the Chilterns Area of Outstanding National Beauty (AONB), on the north western scarp of the Chilterns, and overlooks the Vale of Oxford. It is a remnant of what much of this part of the Chilterns was like many years ago, and as you roam across the site you will discover magnificent flower-rich chalk grasslands, juniper scrub and ancient beech woodlands.

Aston Rowant is one of a series of National Nature Reserves established to protect the most important areas of wildlife habitat and geological formations in Britain. This is a large site covering 159 hectares including large SSSI designated areas (Site of Special Scientific Interest), and was extended in 2000 with financial assistance from the Heritage Lottery Fund.

Ecology

More than a third of the site is chalk grassland characteristic of the Chilterns. A rich flora has developed as a result of low levels of nutrients in the soil combined with a long history of sheep and rabbit grazing. Particularly significant plants found in the short turf include frog, bee, pyramidal and fragrant orchids, Chiltern gentian, dwarf thistle, dropwort and clustered bellflower.

The grassland supports a wide range of insects, including some national rarities. Many different butterflies such as dark green and Duke of Burgundy fritillaries, chalkhill blue, brown argus and silver spotted skipper thrive here. Some of the insects associated with juniper are extremely rare and one of the aims of management is to encourage young juniper plants to establish.

Areas of scrub provide important habitats for both insects and birds. The range of birds found on the site includes wheatear, wood warbler, whitethroat, blackcap and hawfinch. Most spectacular of all is the red kite, these are regularly seen around the site. The red kite was introduced to the Chilterns by English Nature (now Natural England) and they have now successfully established a strong breeding population.

The beech woodlands have carpets of bluebells in spring and include a number of scarce plants characteristic of the Chilterns such as violet helleborine and wood barley. Birds present in the woods include chiffchaff, treecreeper, brambling, tawny owl and nuthatch.

Geology

The geology of the area is vividly exposed by the deep motorway cutting excavated in the 1970s which bisects the Reserve into two sections. In the cutting you can see the horizontal bedding of the Upper Chalk with bands of flint. On top of this are Pleistocene deposits of clay, silts, flints and massive blocks of sandstone known as sarsens, similar to those found at Stone Henge and Avebury. Some examples of the sarsens are displayed in the main car park.

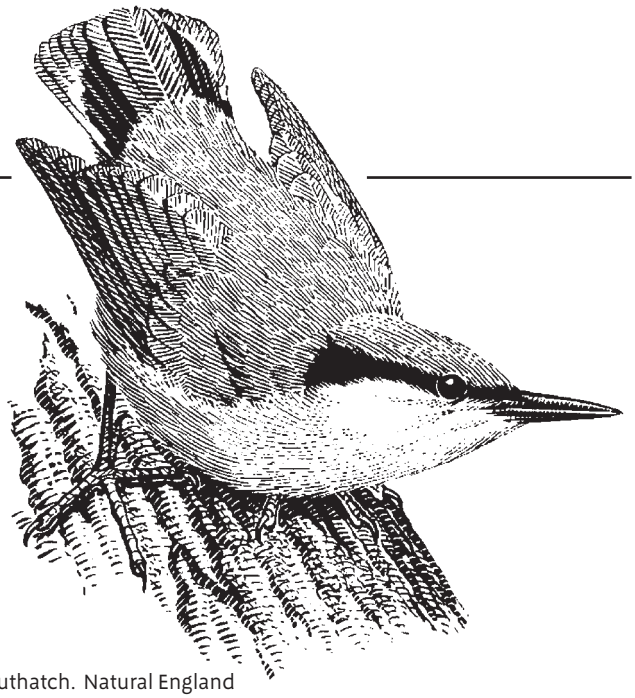
Management

The site is owned and managed organically by Natural England, and management is aimed at keeping the grassland in good condition. This is achieved by grazing our own flock of around 270 sheep. In addition, areas of scrub are cut on rotation to produce different aged stands, and we also protect the juniper bushes from damage by browsing animals.

About Natural England

Natural England has been formed by bringing together English Nature, the landscape, access and recreation elements of the Countryside Agency and the environmental land management functions of the Rural Development Service.

Natural England is working for people, places and nature, to enhance biodiversity, landscapes and wildlife in rural, urban, coastal and marine areas; promoting access, recreation and public well-being, and contributing to the way natural resources are managed so that they can be enjoyed now and in the future.



Nuthatch. Natural England

A vision for the site

Here at Aston Rowant National Nature Reserve we are keen to see the site become more of a centre for community involvement. We would like to see long term use of the site by a variety of community groups and by local people for enjoyment and learning. We also hope to see the site used sustainably as a teaching resource and for it to become a frequent place for school visits.

To help us achieve our vision, Natural England received financial assistance from the Heritage Lottery Fund to set up a Community Involvement project at Aston Rowant National Nature Reserve. The main roles of the appointed Community Liaison Officer include encouraging and organising visits to the reserve by community groups, especially those from ethnic backgrounds, working with health care providers and organising visits from groups with limited mobility, recruiting volunteers to do practical conservation on site, working with youth groups and establishing good links with the local community. Another key aspect of the project is to make greater use of the site by schools by providing outreach visits, on-site visits and an Environmental Education Pack.

Why is Aston Rowant NNR a good site for environmental education?

Wildlife:

- ✔ As one of Natural England's finest reserves and a designated Site of Special Scientific Interest (SSSI), Aston Rowant has some of the most spectacular examples of key habitats found in this part of the country.
- ✔ The site has 3 very distinct, large scale habitats, these being the chalk grassland, scrub and beech woodland; so habitat comparisons can be made whilst remaining in a small area and on one site.
- ✔ High biodiversity facilitates the teaching of food chains and webs.
- ✔ The site is carefully managed and full of wildlife that is easy to spot.
- ✔ As a government organisation, Natural England is very keen to educate young people about wildlife and the importance of conservation, to ensure the future of the natural environment.
- ✔ As an active site for conservation we often have special projects going on that you may be able to get involved with such as putting up dormouse boxes, butterfly counting or seed gathering.

Natural England

Access:

- ✔ Easy to access, next to the M40.
- ✔ Free entry to the reserve and free car parking.
- ✔ A large site with stunning views across Oxfordshire, giving a real feeling of being with nature, a wilderness experience.
- ✔ Good paths and also an open access policy so you can roam around as you like.
- ✔ Some areas of the site are accessible for people with some disabilities. (Contact us for further information.)
- ✔ The site has specially installed "outdoor classrooms" consisting of log seats in naturally sheltered areas, so despite our lack of visitor centre there are good seating areas for having lunch, giving introductory talks and for going through health and safety briefings.

About the Education Pack

Please note that due to much appreciated funding from the Heritage Lottery Fund, the education pack is completely free, as are visits to the reserve, including those led by site staff. You will however need to provide your own refreshments and transport. We may be able to help with transport costs provided you let us know well in advance of your visit. Please contact us for further information.

The activites in this pack are aimed at Key Stage 2 pupils and they can be adapted to suit the different age groups within this Key Stage. The activities are presented in key topics and are laid out as Pre-Visit Classroom Activities, Reserve Activities and also Follow Up Classroom Activites where appropriate. Curriculum linkages, risk assessments and timings are included throughout, along with details of any special equipment requirements.

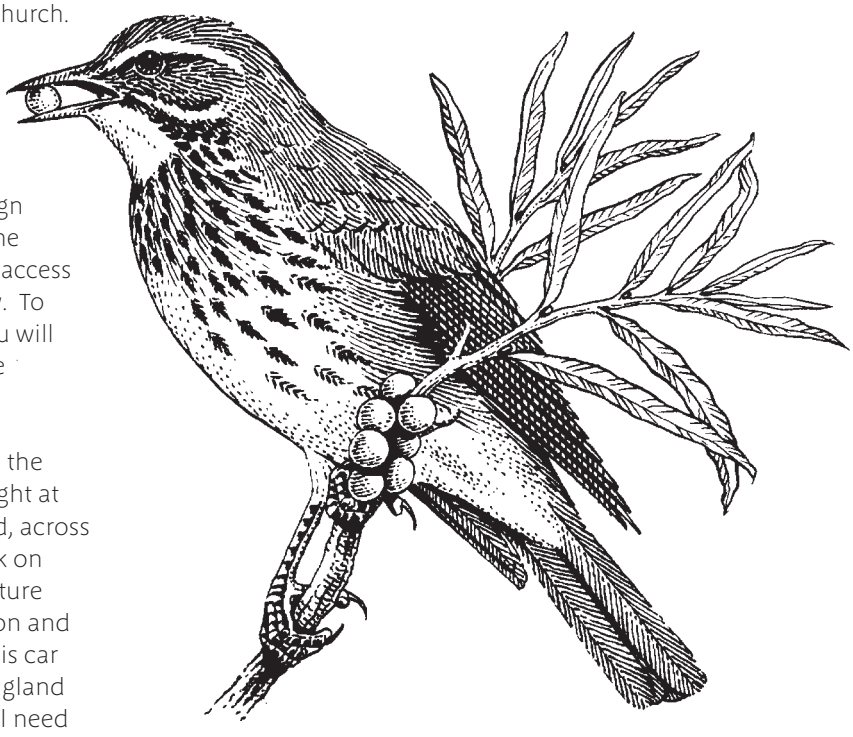
The pack is for use by teachers and support staff and contains sufficient detail for those staff to be able to lead the activities themselves. You will find a map included within this pack showing you the layout of the site with footpaths, car parking and other features clearly labelled, however we do recommend that you come out and familiarise yourself with the site and make any additions to our site risk assessment that you feel are necessary, before arranging your visit.

Another option you might like to choose is to have outreach visits from Natural England staff followed up by a guided visit to the reserve. For this option you can tailor make your day by selecting actitivities from the education pack to suit your needs. You can discuss and book a visit by contacting the reserve office on 01844 351833 or inviting us to visit you at your school. We will then send you a booking form listing any further information you might need. Natural England staff working on the Reserve are fully CRB cleared and first aid trained, however you should bring your own first aider as well as a comprehensive first aid kit.

How to get here and where to park

Aston Rowant NNR forms an important component of the landscape of the southern Chilterns Scarp. The open slopes and the huge cutting occupied by the M40 around junction 6, make for an imposing and well known landscape feature. Most people know where the cutting is so finding the reserve is relatively straight forward.

- The best place to leave the motorway is at junction 6 where you come out onto the B4009. Follow this road towards Princes Risborough and very shortly you will come across the A40 signposted towards Stokenchurch.
- Turn right here and follow the A40 up the hill for approximately 2km until you see a brown sign for Aston Rowant National Nature Reserve.
- Turn right at the sign and you will see another sign directing you to turn right, this will take you to the Aston Rowant NNR car park, which will give you access to the reserve on the north side of the motorway. To get into the car park with a minibus or coach you will need to contact the site staff who will unlock the barrier for you.
- If you need to access the area of the reserve on the south side of the motorway then do not turn right at the second brown sign. Carry on along the road, across the motorway until you see a sign for a car park on your left. This is the Cowleaze Wood and Sculpture Trail car park owned by the Forestry Commission and shared by Aston Rowant NNR. The barrier on this car park can be unlocked by contacting Natural England site staff. In order to access the reserve you will need to cross the road, you will see the entrance signs and log sculptures marking the way in to the reserve. Please note that the motorway bridge is weight restricted to 7.5 tons so coach drivers will have to take a different route.
- There are other access points on the reserve if you are just being dropped off, these are located just off the Ridgeway National Trail near the Reserve office, accessible from the A40, or you can get to the reserve from Hill Lane, near the Oxford Tube bus stop on the B4009.



Redwing. Natural England

Other facilities

Toilets: As we do not have a visitor centre there are no public toilets on site. However if you book a visit with site staff your class will be able to use the toilet facilities in the site office. These facilities may also be used for hand washing but we do recommend that you bring anti-bacerial hand gel or wipes for cleaning hands on site after certain activities.

Local Amenities: Lewknor village hall is very close by so can be hired at a very reasonable rate if you would like to do half a day inside and half a day out on the site. Toilet and seating facilities may also be available at St. Margaret's Church in Lewknor. Please contact us for further information.

Equipment Loan: Some of the activities in the pack require certain pieces of equipment or materials for games, all of which can be made or bought by the school. However we do have a selection of materials that can be borrowed. A full, up to date list of what is available accompanies this pack.

Natural England

Some useful local organisations

- **The Chilterns Conservation Board**
  A statutory body set up to promote the conservation, understanding and enjoyment of the Chilterns Area of Outstanding Natural Beauty. They have also produced an excellent Education Pack about Red Kites, copies of which are available on request from us at Aston Rowant Nature Reserve or by contacting them directly. They can also provide talks about Red Kites led by experienced volunteers. www.chilternsaonb.org
- **The Northmoor Trust**
- **BBOWT – The Wildlife Trust for Berkshire, Buckinghamshire and Oxfordshire.**
- **RSPB**
- **The Forestry Commission**
- **National Trust**

Red kite. Gerry Whitlow

When visiting Aston Rowant National Nature Reserve please follow the Countryside Code!

- Be safe – plan ahead and follow any signs.
- Protect plants and animals and take your litter home
- Leave gates and property as you find them.
- Keep dogs under close control.
- Consider other people.

For further information go to www.countrysideaccess.gov.uk

Legend

- NNR boundary
- Woodland habitat
- Good areas for animal tracks and signs
- Log piles for mini beast hunting
- Good areas for grassland mini-beast hunting and sweep netting
- Especially wildflower-rich area
- Flat fields suitable for run-around games such as seed tig and food chain activities
- Road
- Footpath
- RK — Very good red kite observation point
- P — Car park
- Outdoor classroom seating area

Scale 1:12500

0 — 0.5 — 1 Kilometres

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Sensory Nature Trail – Aston Rowant style!

These activities can be carried out as one complete session, used as part of the Nature Trail marked on the map on page 11, or fitted in when covering another topic (as noted).

The Sensory Nature Trail is a popular, interactive journey through our ancient beech woodland and out onto the chalk grassland. It consists of a series of short activities, creating a real experience of nature!

Suggested locations for the activities are numbered on the map, and are clearly identifiable on the reserve by log sign posts, marked with the following symbols: Squirrel, Finch, Deer, Pheasant and Sheep

The first two activities are to set the scene:

Number 1: Squirrel

Time Stands Still – To get a real feeling of freedom ask all the children to remove their watches when you first enter the nature reserve. Put them all in a soft fabric bag and hold onto them until they finish for the day. Explain that on the earth walk there is no such thing as clock time, only seasonal time. The earth walk will be different at different times of year. Discuss what will be different in the woods at different times of year. Eg leaves falling, flowers emerging etc.

And

A Mysterious Journey (Touch) – Before visiting the site with your group visit yourself and set up a rope journey from the edge of the woodland leading to the outdoor classroom. You may be able to ask site staff to do this for you. You will need a rope or thick string and you will need to wrap it around trees or posts at just below the average shoulder height for your group. Don't go straight from the road to the outdoor classroom; weave the trail around a bit, making sure you avoid very brambly patches and obvious trip hazards. When you bring your group make sure they all put a blindfold on before reaching the start of the trail or extend the trail to somewhere where the outdoor classroom cannot be spotted from! Ensure that they put their hands on the rope one at a time, leaving a few metres space in between them to make sure they don't bump into each other. They should be instructed to follow the rope until it ends, where they will be led to a seat in the outdoor classroom by another member of staff. When all of the children are sitting down, remove the rope trail and then tell them they can take off their blindfolds. The idea is that the children will feel as if they have made a long and mysterious journey into a new place, even though they won't have actually travelled very far. It will also heighten their senses, preparing them for the activities ahead.

Number 2: Deer

Nature's Concert: (Aural.) As the house lights come down (they close their eyes) the concert begins. The children see how many different sounds they can hear before the interval when the house lights come up and the group can discuss the concert. In the second half they listen even more closely and see if they can hear any new sounds. You might like to ask the children to draw quick, simple sketches to represent some of the sounds that they can hear, for example bird song might be a picture of a beak with musical notes coming out of it, traffic noise could be a car etc. (Can be used as part of the habitats section.)

Number 3: Pheasant

Smelly Smoothies: (Olfactory) the children are each given a cup in which they collect different items from around the wood and mix together using a "blender" in the form of a twig! When the smell is perfected they return to the group to pass around their unique smelling "smoothie" and give it a name.

Number 4: Sheep

Touchy Feely Boxes: (Touch) The children are given collecting boxes with touch words in them; egg boxes work well, paint them to make them more exciting. The children then go on a scavenger hunt to collect items to match their "touch" words. They then return to the group, pass their items around individually and see if everyone else can guess the touches!

Words could include:

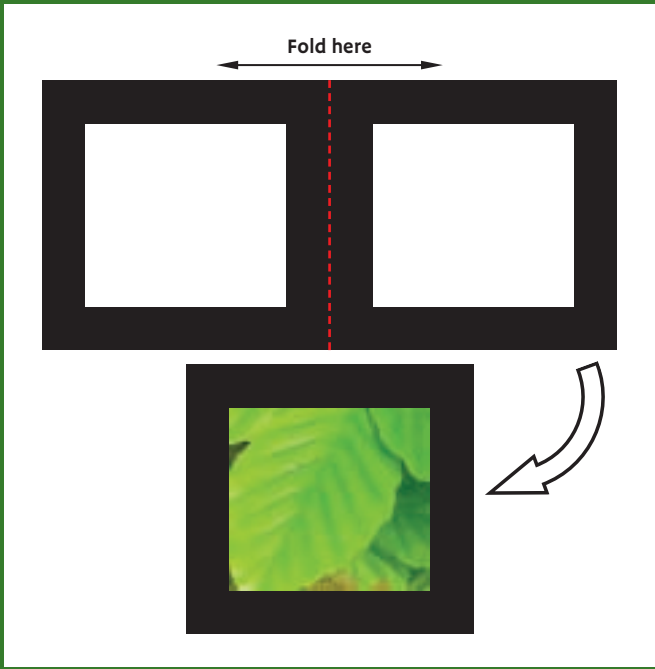
Soft	Rough
Hard	Lumpy
Prickly	Crinkly
Tickly	Fluffy
Smooth	Squashy

Number 5: Finch

Meet a Tree: (Touch and visual) Working in pairs the children take it in turns to be blindfolded and introduced to a tree. They start at a central point where they are gently spun around by their partner 3 times clockwise and 3 times anti clockwise. They are then led to a tree where they have to feel its texture, structure, width and leaves before giving the tree a big hug to say thank you, it is only polite! Then they are spun around next to the tree in the same way as before and led back to the central point. Now they have their blindfold removed and have to see of they can find their tree. If they are not sure they must take a guess before their tree is properly introduced to them.

And

Slide Show. – After meeting a tree each child will collect a leaf from their new wooden friend and place it in a ready made slide case made from black card / thick paper as shown below.



Then they should stand in a circle and hold it up to the light and comment on what they like about it. They should then pass it on to the person next to them and have a look at the one that is passed to them. Keep doing this until the children have had a look at all the leaves. The slide show has now ended.

Optional extra: find out more about your tree

An extension to the "Meet a Tree" activity, this is a great way of incorporating some numeracy into the Nature Trail. Each child can work out the age and height of the tree they have just met!

How old is that tree?

1 On average, trees increase their circumference by 2.5cm a year, so you need to start by measuring the circumference of the tree in centimetres, do this using a tape measure at a height of 1 metre from the ground.

The Chilterns Conservation Board

2 Now divide this measurement by 2.5 to give you the approximate age of your tree in years.

How tall is that tree?

This activity has to be done in pairs.

1 Get a ruler and a tape measure, then go to your tree. Start from the side where there is a clear space, because you need to walk away from the tree.

2 Walk backwards away from the tree, holding the ruler upright at arms length, until the tree appears to be the same height as the ruler.

3 Stop and turn the ruler sideways until it is parallel with the ground. Keep one end on what seems to be the bottom of the trunk.

4 Get your partner to walk sideways from the tree (not towards you!), until he/she is level with the end of the ruler. Ask him / her to stop.

5 Now measure from your partner to the base of the real tree. This is the rough height of the tree.

What sort of tree is it?

Some trees will be easy to recognise as they might have familiar characteristics such as conkers on horse chestnuts or acorns on oak trees. Some might be associated with occasions such as the Christmas holly or pine.

This is a good opportunity to use keys to identify trees; these can be found in books or bought from the Field Studies Council. We also have a selection for you to borrow.

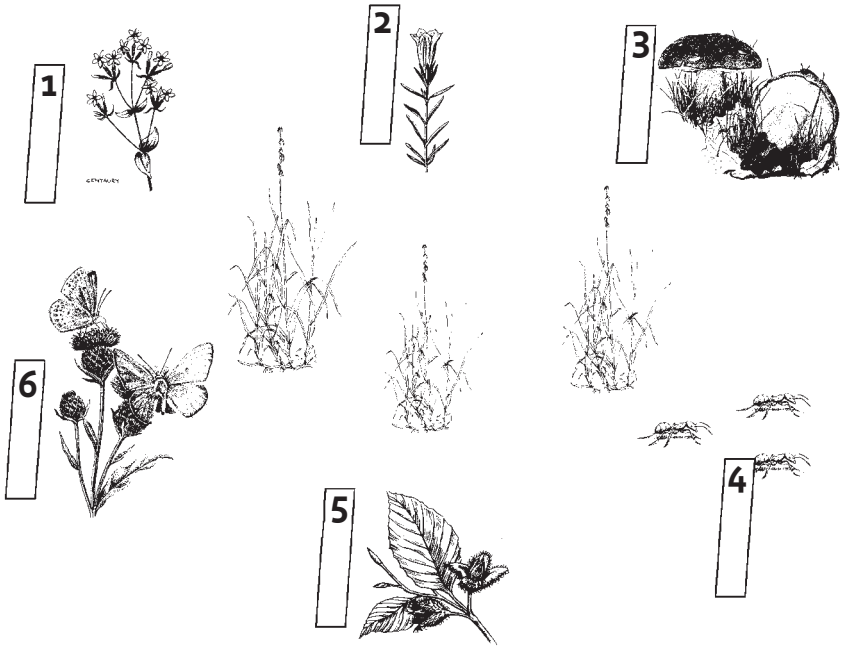
Number 6: Squirrel

Make your own Mini Nature Trails!

You will need: Plastic plant labels, permanent marker pens, clipboards, paper and pencils / crayons.

This is a good activity to do on the woodland / grassland border near the end of the trail. Introduce the concept of the nature trail as a way to draw attention to interesting natural features. After splitting the class into small groups of 3-4, ask the children to have a look around for areas where there are lots of interesting mini-features; ensure that they are given a fixed area in which to look to avoid anyone wondering off! Give them each 6 plastic labels and a pen. They have to look for key points of interest and join them up to make a trail. They should do this by numbering the labels and also noting that it is their trail, they could either name the trail or put their initials on the labels.

They should have a clipboard with paper that they should write details of their trail on. They should try and make it colourful and then pass it on to another group to have a look at and follow their trail.



Number 7: Deer

The Quest for the Shattered Rainbow: (Visual) Explain to the children that you went for a walk on the reserve and you were looking at a beautiful rainbow in the sky when it shattered into millions of tiny pieces and fell to earth. You collected some of the pieces and put them in a box. You will then produce a small box full of colourful "Fimo" pieces (shards of shattered rainbow) and give one to each child. Their quest is to take their piece of rainbow and find something in nature that is the same or a similar colour and sit by it. You can then go round and look for all the children that are sitting down and see what they have found. When you have finished looking at a child's findings let them join you while you go round and look at the others. Continue until you have seen all of the findings and then collect up the shards of rainbow.

A great place to do this is on the wildflower rich grassland. However it may be worth attempting it in the woods first as this will be harder, then do the same on the grassland and compare the colours found in the woods and the colours found on the wildflowers. Discuss why the flowers are so colourful and link in with pollination. You will on doubt see this in action on the grassland with the abundance of butterflies and other flying invertebrates! (Can be used as part of the Flowering Plants section)

Number 8: Pheasant

Tree Top Walk – (Visual) Working in pairs one child places a mirror under their nose and is guided along a path though the wood by their partner, whilst looking down into the mirror to see what it's like to be a squirrel or bird living in the tree tops. They should then swap round and let their partner have a go. When the group reconvenes encourage them to discuss their experience. What was different? (Can be used as part of the Habitats section.)

Number 9: Sheep

A Greetings Card from Nature: (Visual.) The children are given a simple folded card with a double sided sticky tape strip on it and have to collect small items from around the site that they like. Do not let them include any wild flowers without your permission and do not permit them to use berries or fungi as they may be poisonous and are likely to make a mess too! Only allow them to use very common flowers. This is a nice memento of the day to take home. Some ideas for using these cards when you get back to class could include writing environmental pledges in them or writing about their day and sending it to their parents.

Nature trail map

Legend

- NNR boundary
- Woodland habitat
- Nature trail
- Footpath
- Road
- 2 Sensory nature trail activities
- Outdoor classroom
- P Car park

Scale 1:7500

0 50 100 200 300 400 500 Metres

NATURAL ENGLAND

Habitats and adaptations

Classroom Activities

Introduction

Introduce the word organism as a term for all living things. Use picture cards to identify and sort into plants and animals and then further categories according to the children's own groupings. Some children may not recognise trees as plants or spiders as animals. Classify minibeasts by number of legs, body segments etc.

Curriculum link
Sc2: 4b, c

Introduce the term habitat as a place where an animal lives, look around the school grounds for different habitats and look for what lives there. Consider and group habitats according to scale eg mini habitats, micro-habitats.

Habitats you will find on the site include:

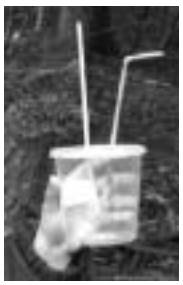
(Decreasing Scale)
- ✔ In the wood
- ✔ In the fields
- ✔ In the hedge
- ✔ In the trees
- ✔ On the bushes
- ✔ On the woodland floor
- ✔ In the leaf litter
- ✔ In long grass
- ✔ Under fallen logs
- ✔ Under a stone
- ✔ Under a leaf
- ✔ On a flower

Curriculum link
Sc2: 2c, e,
Geography: 2b

Make a Pooter

Using the instructions below your class can make their own pooters! A pooter is the ideal piece of equipment for minibeast hunting and it is really easy to make your own to take with you on your trip!

You will need:



- ✔ Clear container with a lid, e.g. a large natural yoghurt pot or deli container
- ✔ Bradawl or hammer and nail
- ✔ 2 thick flexible straws
- ✔ Small piece of thin kitchen cloth or tights
- ✔ Tape
- ✔ Plasticine or Blu Tack

How to make a pooter

1. With the bradawl or nail and hammer punch two holes in the lid just large enough to push the straws through. A teacher should prepare this bit in advance so that the tools are not lying about during the lesson.
2. Push one straw through each hole.
3. Seal the spaces around the holes with plasticine or Blu Tack.
4. Cover the end of one of the straws with a small piece of tights or thin kitchen cloth and tape it in place.
5. Fit the lid securely onto the container.

How to use a pooter

To collect mini-beasts place the end of the longer straw over the bug and suck on the shorter straw to draw it into the jar. Remember to brief the children, making sure they only suck up minibeasts that will easily fit up the straw, and no slugs! They will almost certainly try, but the slugs are sticky and get stuck in the tube rendering the pooter useless!

Always return the minibeasts to where they were found when you have finished observing them.

How to set up a pitfall trap:

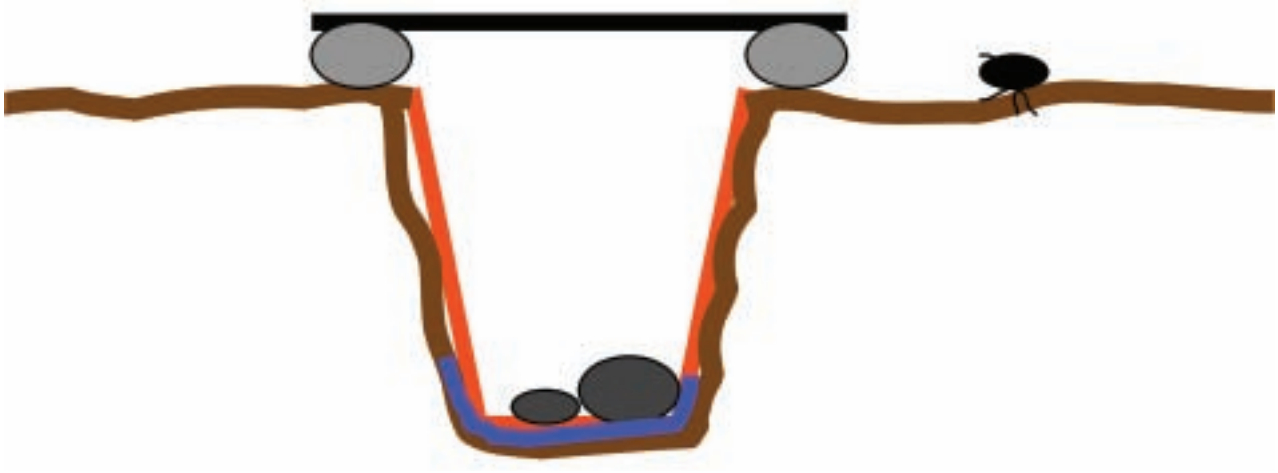
This trap is good for sampling minibeasts that crawl along the woodland floor. It is easy to set up and should be set up 1 day before the visit and clearly labelled with a stick and coloured tape so it is easy to find again! The trap should not be left any longer or else the captives may eat each other. Another thing to be aware of is that if a trap is left too long then shrews can fall in and will starve to death once they have eaten all the captured minibeasts.

You will need:

- ✔ A plant pot with steep sides, any size will do but keep it fairly small to avoid too much digging if the ground is hard.
- ✔ A piece of J-cloth or other porous fabric.
- ✔ Sticky tape / glue gun
- ✔ Trowel
- ✔ Square of thick card or plastic
- ✔ Small pebbles / stones.

How to set up a pitfall trap:

1. Glue / tape the J-cloth over the base of the plant pot to cover the holes yet still allow for drainage.
2. Dig a hole for the pot to go in, ensuring that the top of the pot is level with the ground, with the soil packed closely around it so that the minibeasts fall in.
3. Place the stones in the pot to ensure that the trap will stay in place and also to offer shelter for the minibeasts.
4. Then construct the shelter over the trap to stop any grass / leaves falling in it as the minibeasts will escape by crawling up them. This should also reduce the chances of shrews falling in or birds feeding from the trap.



Discuss other trapping methods that might be used on their mini beast safari such as sweep netting, leaf litter searches and tree shaking. Talk about the importance of always returning the minibeasts to the habitat where they were caught when you have finished observing them.

On reserve activities

Recognising Habitats

Curriculum link
Sc2: 5b, c

Walk round the reserve to identify habitats and what lives in them, identify characteristics of different habitats. Ask children to consider conditions in the different habitats eg light, temperature, water, soil.

Using Quadrats

Time: 45 minutes – 1 hour

Curriculum link
Sc1: 1b, 2a, c, d, e,
Geography 2b, 7c

A quadrat is a commonly used tool for surveying habitats, particularly when looking at plant communities. A quadrat is a hollow square frame made of metal, wood or cardboard. It can be any size although the most practical for this activity is a 1m square quadrat.

In this activity you will be comparing 3 different habitats: woodland, scrub and chalk grassland. In order to make it a fair experiment the quadrat must be placed at random, so gently toss the quadrat onto the ground, ensuring that you are unbiased towards areas that you think look particularly interesting!

When you have laid down your quadrat in a certain habitat, have a look at the approximate percentage cover of each main component, for example:
30% Bramble
20% broad leaved, tall green plant
50% bare ground and leaf litter

You do not need to identify the plants in your quadrat, a simple description of their leaf shape, height and colour is sufficient. Repeat the quadrat 3-5 times in different random locations in the same habitat, recording your data each time.

What to look for:

- You might find that plants are taller and broader leaved in the woodland than in the grassland – this might be because there is less light in the woodland due to shading from trees and a layer of leaf litter. The ground flora therefore needs to grow taller to reach it.
- The plants on the grassland are generally shorter due to more exposure to wind, and they also receive plenty of sunlight. The scrub is a transition habitat so your results might fall in between the other two.
- Consider the effect of water on the height and structure of the plants found in different habitats.

- Look for evidence of grazing on plants in different habitats and consider it's effect.

- Look at the type of plants that are in each habitat, are they different?

- How do you think the range of plants found in each habitat affects the creatures that live there? Did you see any creatures whilst doing your quadrat survey?

Allen Beechey

Minibeast Safari!

Curriculum link
Sc2: 1c, 2c, e, 5b, c,
Geography: 2b, 7c

Time - The great thing about a minibeast safari is that timing is totally flexible, children could do this for hours in a good place if you have lots of equipment, or you could move between different locations, recording what you find at each one.

A Minibeast?

The term "minibeast" is used to cover insects, arachnids, crustaceans and gastropods, so as to avoid going into complex classification with this age group. The concept of looking for a miniature "beast" also makes the activities more exciting! Investigating mini-beasts is a great way of introducing habitats and also the adaptations that different organisms have to suit their environment.

When looking for mini-beasts ask the question "What does a mini-beast need in its habitat?" Every animal needs certain basic things in order to survive, these are:

- Food
- Water
- Somewhere to make a home
- Protection from bad weather
- Other animals of the same sort in order to breed
- Protection from predators.

Some useful tips when looking for mini-beasts:

- Most mini-beasts like damp conditions. Their bodies are small and dry out easily. This is why slugs and snails eat more at night, when the air is damp.
- Mini-beasts are cold-blooded. This means that their body temperature goes up and down with their surroundings.
- Mini-beasts try and stay in places where the temperature is fairly constant. They become more active when the weather is warm.

Where can I find mini-beasts?

Mini-beasts can be found in a variety of locations and the site will be swarming with them in the summer, but here are some ideas for where to start.

- **Damp conditions:** e.g. under logs and stones – millipede, beetle, woodlouse, centipede, slug
- **Dry conditions: e.g. stone walls – spider, snail, ant**
- **On plants: ladybird, plant bug, shield bug.**
- **In soil: worm, springtail**
- **On grass or in leaf litter: beetle, snail**
- **In the grassland or on wildflowers:** butterflies, bees, hoverflies and crickets.

Safari Gear!

You will need:

- ✔ Pooters
- ✔ Small plastic spoons
- ✔ White trays
- ✔ Sweep nets
- ✔ Magnifying glasses
- ✔ Plastic specimen pots.
- ✔ Basic mini-beast ID chart included in this pack.
- ✔ Any other mini-beast keys and books that you have.

Many of these are available to loan from the site office, just contact us in advance to make sure.

Learn new field skills by using several trapping methods in different habitats.

Natural England

Natural England

Try out the following:

- **Pooters** that you made in class.
- **Pitfall traps** – set up the day before. To empty the trap remove the stones and either tip the minibeasts into a tray, or suck them up using a pooter.
- **Sweep netting.** Borrow nets from the site office in advance, or make your own sweep net with a cane stick, strong wire and on old pillow case. Sweep it through long grass and empty it into white trays. You can put any more lively insects into a pooter or specimen pot to have a closer look!
- **Tree shaking** – gently shake a tree branch over a large white sheet or tray and collect what falls down.
- **Leaf litter searches** – place a few handfuls of leaves from the woodland floor into a white tray and search among them for mini-beasts.

Look at your catch through a magnifying glass but ensure that you do not do this in direct sunlight as it will burn the mini-beast. Collect mini beasts in clear containers (with air holes) labelled with the habitat and look at adaptations to that particular habitat, eg colour, how it moves, defence.
Make sure all minibeasts are treated with great care and are returned to their habitat afterwards.

Curriculum link
Sc2: 4a, b, c

Use Simple Charts and Keys to Identify Minibeasts.

Although it is not essential for the children to identify everything they see it is useful for them to recognise some common mini-beasts. Try using the Basic ID charts included in this pack to identify common species, or use Field Studies Council keys, available to borrow from us or to buy online. Keys are useful tools if your minibeast knowledge is a little rusty as you can go through each stage with a child, coming to the right answer together rather that you having to answer "what is it" over and over again!

Play Beastie Bingo!

Resources for this game can be found on the CD accompanying this pack.

The children will have learnt the names of some common minibeasts throughout the day so test them with this fun game! Each child is given a bingo card with a series of mini beast pictures on it (not their names). The images are the same as those used on the Basic Minibeast ID Chart. The teacher has the same pictures with name labels on them, on small cards all mixed up in a box / bag. The teacher has to call out the names of the mini beasts drawn at random, and the children have to use there ID skills to find out if they have the minibeast on their card. The first child to cross off all the minibeasts on their card has to shout "Beastie Bingo" to win!

Natural England

Follow up activities

Make your own Minibeast!
Time: 1 hour

Curriculum link
Sc2: 1c. Design & Technology 2a, b, c

Explain to the children that you are going to make your very own imaginary minibeast! They will not be making existing minibeasts but creating brand new ones!

The class should begin by completing the worksheet about their minibeasts encouraging them to think about questions like where it lives, what it eats, how it avoids being eaten and how it moves. The worksheet can be found in on the resources CD. Before you do this with your class making some ready made examples of your own is worthwhile. Ask the children to bring in a selection of clean rubbish from home to make their minibeast with, also provide a selection of junk for the whole class and use glue guns to construct the sculptures. Afterwards ask the children to introduce their minibeast to the rest of the class.

Further practise with using keys.

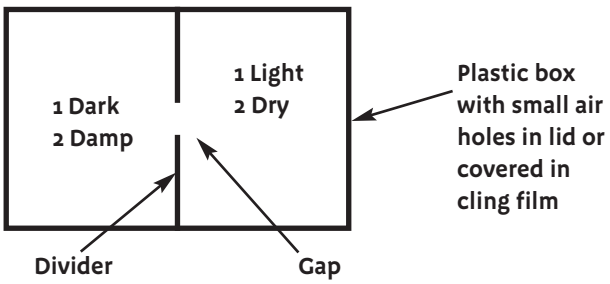
Curriculum link
ICT opportunity

Design your own class key for minibeasts!

Choice chambers experiment

Curriculum link
Sc1: 1b, 2a, b, c, d,
Sc2: 5b

Collect a number of woodlice and set up a choice chamber for them as shown and leave it over night. Do the woodlice prefer the dark habitat or the light one? Do they prefer damp or dry conditions? Ensure the woodlice are returned to a suitable habitat after the experiment, ideally where you found them.



Natural England

Habitat Estate Agents!

Curriculum link
Sc2: 1c, 5b. En / Citizenship – letter writing

Pass round sets of pictures of "home seeking" creatures, along with their requirements for a place to live, and ask the children where they think each one would be most at home out of all the habitats they have studied so far.

Ask the children to play the part of an Estate Agent, and to write a letter to one of the creatures, describing the ideal home that they have found for them.

This is a good opportunity for the class to practice their letter writing skills as well as to think further about habitats.

Ask the children to make up funny addresses for the new homes such as:

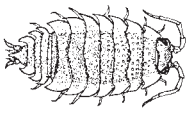
Long Grass Road,
Grassy Field,
Grassyton,
Meadowshire.

Mossy Log,
Woodland Close,
Beechington
Forestshire

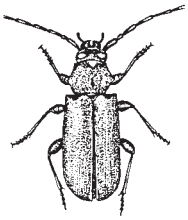
Basic mini-beast identification chart (side 1)

- Found mostly in damp places such as under logs and stones and in leaf litter

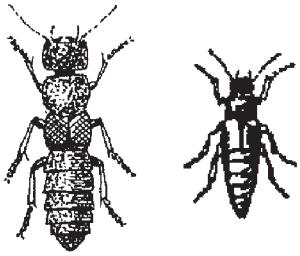
Springtails



Woodlouse



Ground beetle



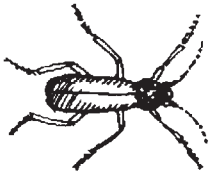
Rove beetles

Weevil

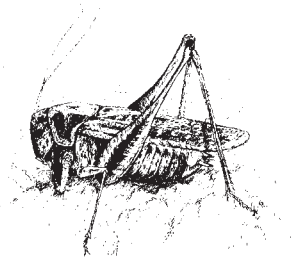
Earwig

Millipede

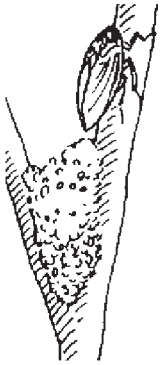
- Found mostly on plants and amongst grasses



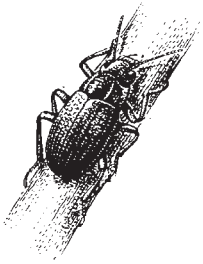
Soldier beetle



Cricket



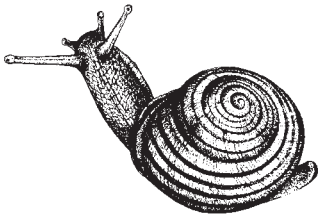
Plant hopper



Plant beetle

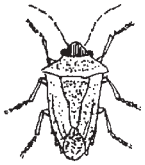
Ladybird beetle

Plant bug



Snail

Yellow meadow ant

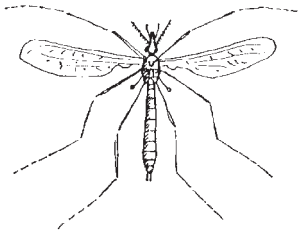


Shield bug

Butterfly

Basic mini-beast identification chart (side 2)

- **Other mini-beasts**

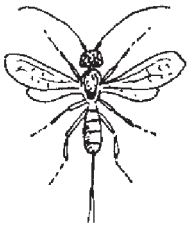


Crane fly

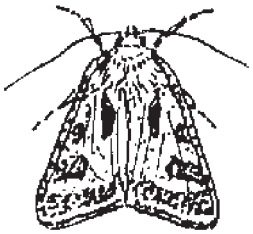
House fly

Blue bottle fly

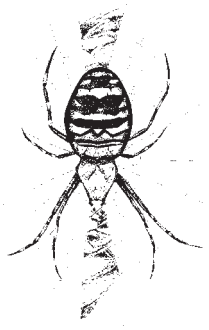
Hover fly



Parasitic wasp



Moth



Spider

- **Young mini-beasts**

Moth pupa

Fly pupa

Ladybird larva

Caterpillar

Various beetle larvae

Feeding relationships

Classroom activities

Introduce the concept of food chains and feeding relationships using simple examples of food chains. Examples of food chains can be found on the Resources CD. Discuss as usual the role of plants as producers, linking with nutrition and photosynthesis where appropriate for the age group.

Start by focussing on one habitat and ask the children to list things that they think might live there. Slowly build up food chains and display them correctly with arrows. Introduce the terms producer, consumer and predator also include herbivore, omnivore, carnivore etc.

Sloes on Blackthorn. The Chilterns Conservation Board

On reserve activities

Food Web Cards:

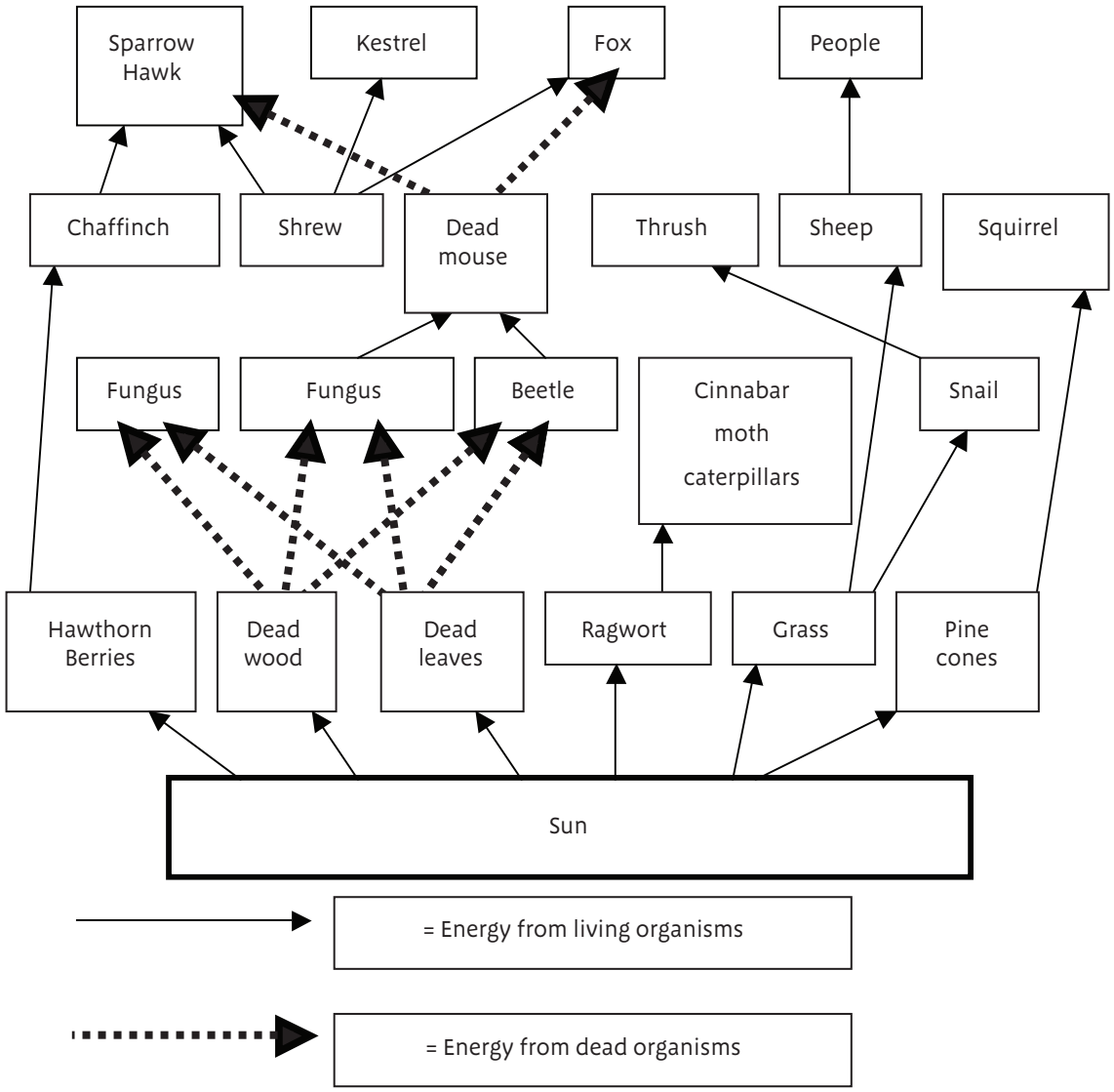
Curriculum links
Sc2: 5d, e, 3b

The children are each given a card with an animal or plant and an example of its food or where it gets its energy from. Those with plants will have the sun as their energy source. There are not enough cards for every child as this would over complicate the web, so any extra children can be extra "suns" or work in a pair.

The children have to find the person with a card that is their food item and put a hand on their shoulder; eventually a food web will develop. To check the web, use the diagram.

It is worth noting that some of the energy is passed along the chain through dead organisms as well as live ones. Discuss energy flow by passing "energy" through the web like a Mexican wave by asking the children to lift their arms up as the "energy" goes through them.

Then go on to talk about why biodiversity is important in eco systems by removing one of the children from the food web and seeing what happens to those dependent on it. A chain is only as strong as it's weakest link. Discuss how important it is to look after animals and where they live.



What a Tangled Web!

Curriculum links
Sc2: 5a, d, e, 3b

Give each child a card from the resources sheet included in this pack (used for the first activity) and stand them in a circle. Run pieces of string between those that are next to each other in the food web, ie what eats what? Each child will have a bundle of pieces of string in their hand depending on how many things eat it. Where there is more than one of something such as dead leaves, grass or dead wood; have 2 / 3 children playing that part to ensure that everybody has a role. Give the scenario that one of the insects has been killed by pesticides. The effect of this is shown by the child with that card tugging gently on their strings. The children at the other end will feel the tug and tug on his / her strings, when each child feels a tug they should tug lightly back. Eventually all he children will feel the tugging. Explain how the loss of one animal from the food web can affect the whole ecosystem, stressing the importance of biodiversity.

The Sparrow Hawk Game!

Time: Flexible

This is a simple, energetic game which is a good way to start or end the day. Based on the classic "Piggy in the Middle" game, all you need is two soft tennis balls.

Stand your class in a circle and choose one child to stand in the middle, that child is the sparrow hawk. Explain to the children that the food chain here is that small birds like chaffinches eat seeds and berries, and the sparrow hawk eats the small birds. However the small birds fly quickly and are difficult to catch.

The balls represent the small birds and the rest of the class must throw the balls to each other, keeping them below head height. The sparrow hawk must try to catch the balls. If they do the child that threw the ball becomes the sparrow hawk.

Bat and Moth.

Time – Flexible.

You will need:

- ✔ A blindfold or "bat" mask with no eye holes.
- ✔ A moth headband, try attaching pipe cleaners to a headband, to represent moth antennae.

Another fun activity based on a classic feeding relationship. Stand the class in a circle and ask them to close their eyes. Put the bat blindfold on one child and the moth headband on another. Ask them all to open their eyes and guide the blindfolded bat to the centre of the circle.

Explain that the bat has very poor eye sight and that it finds it's food, insects like moths, by sound. The bat gives out a clicking sound which we can't hear, but it rebounds off the prey telling the bat that it is there, and guiding it in the right direction. This is called echolocation.

In this game the bat calls out "bat", to which the moth replies "moth". The bat has to work out where the sound is coming from and walk towards it, tapping the moth on the shoulder when they know who the moth is.

Continue playing a few more rounds of the game with different children as the bat and moth. The bat will soon realise that it is easier to find the moth when "bat" is said more frequently. Hence why when you hear bats through a bat detector the clicking sounds are very frequent.

Follow up activities

Habitat Heroes: Continuing along the line of conservation, raised after the food web game, discuss ways in which the children can become habitat heroes! Encourage children to make a pledge.

Curriculum links
Geography: 5b

Ideas can include links with:

- The 3Rs: children may promise to reduce, reuse and recycle their waste to save resources and reduce the amount of landfill space needed.
- Wildlife Gardening: Planting wildlife friendly plants and trees in the school garden, making log piles to create habitats or putting up bird boxes and feeders.
- Supporting Conservation Charities: Sponsored events to make donations to Wildlife Trusts or the Woodland Trust for example, to help with nature conservation. Look for "sponsor an animal" type campaigns.

Rock rose and wild thyme. The Chilterns Conservation Board

Tracks and signs

This topic is best covered between autumn and early spring when the ground is quite wet, as footprints show up better in mud!

Curriculum links
Sc2: 5a, d, e, 3b

Classroom activities

Introduce the topic by discussing how we can tell that a person has been somewhere. They might have left foot prints if it is muddy or left an indent on a squashy sofa. They might also have left evidence of food such as a half eaten apple behind or even dropped litter. Have a look for such signs in the classroom then take the children out into the school grounds to look for human tracks and signs. Then begin looking for animal trails, there may be dog footprints by the school gates or bird footprints in mud.

You might also find damage to plants by insects or nut shells if you have nut bearing trees in the grounds.

Produce a map of the school grounds and as a class label what you found and where. This might be a good activity to do during geography lessons as the school grounds can be measured and mapped by the children using a tape measure or trundle wheel if you have one.

On reserve activities

Plan a walk round the site looking for evidence of wildlife. The area on the south side of the motorway is best for this as there is the greatest variety of obvious evidence. (Please see map for key areas.)

Familiarise yourself with the images below and make copies for the children to use. When you find a track or sign use the Detective Woolly evidence sheet with the children to record the findings. Consider the following questions when you find some evidence that an animal has been there:

- If it is a footprint is it left by a paw or a hoof?
- How big do you think the animal that left the track might be?
- Do you know anything about the habitat of the animal you suspect might have left the evidence, if so are you in the right habitat for it?
- Can you follow the footprints in a certain direction? If so where do they lead? Maybe to a burrow or to dense woodland?
- Are the tracks going in a straight line or do they wander about a bit? If they wander the animal may have been grazing, if they are in a straight line the animal may be going back home or towards shelter. Deer use regular tracks that they follow round their territory, and these can be quite visible in woods. Sheep often use tracks which can be clearly seen on the grassland.
- Look around, can you see the animal that might have left the evidence?
- Is there a burrow or nest nearby?

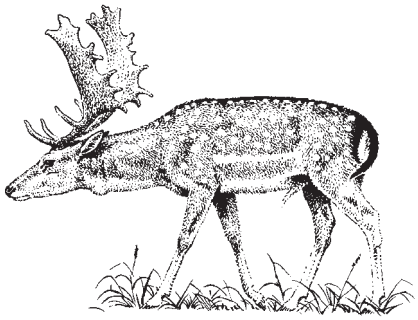
Evidence you might come across...

Mammals

Deer

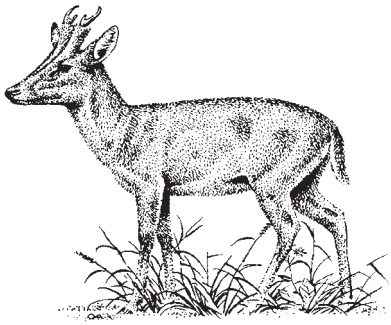
There are three species of deer found on Aston Rowant NNR, these being Fallow, Muntjac and Roe. Fallow and Muntjac are the most common and they can even be spotted grazing on some areas of the reserve, especially on the south side of the motorway, call us to see where they have been spotted most recently. However even if you don't see any actual deer there is plenty of evidence that they are here! The following photos show evidence of deer presence, look out for them and record them on the Nature Detectives worksheet!

(Females are called does and are similar to the bucks but do not have antlers. Note that bucks shed and re-grow their antlers every year.)



Fallow Buck (male)

Roe buck



Muntjac buck

Fallow Deer foot prints. Natural England

Muntjac Deer foot prints. Natural England

Fallow deer hair on a barbed wire fence. Natural England

Fallow deer hair on the ground. Natural England

Deer droppings. Natural England

Deer trail through woodland. Natural England

Damage to vegetation by Deer

Bluebell shoots nibbled by muntjac deer. Natural England

A branch with bark rubbed off by roe or fallow deer shedding the velvet from their antlers. Natural England

A branch with bark nibbled off by deer. Natural England

Sheep

There are 270 sheep on Aston Rowant National Nature Reserve and their footprints and droppings can easily be mistaken for those of deer.

Tips: Deer droppings have a tapered tip at one end whereas sheep do not, sheep droppings are also often packed together as shown in the picture, this does not happen with deer.

Sheep footprints are more rounded whereas deer prints have a more pointed front end.

Sheep footprints. Natural England

Sheep droppings. Natural England

Rabbits

There are a lot a rabbits on the site and they can easily be spotted all over the site, especially on the southern part of the reserve in an area known as The Warren which is labelled on the map as being good for observing tracks and signs. You will see lots of burrows across the site and also scrapings on the ground caused by rabbits. Their droppings are small and very rounded, so are easily distinguishable from sheep droppings.

A rabbit burrow (warren). Natural England

Scrapings on an ant hill by rabbits. Natural England

Rabbit droppings. Natural England

Badgers

Badgers are present at Aston Rowant but it is unlikely that you will have to privilege of seeing them. However evidence of their presence can be found on several areas of the site, although we are unable to disclose the locations of the setts as they are protected animals.

Badger holes are bigger than rabbit holes and you are likely to find several entrances to the sett quite close together. Their droppings are not dissimilar to dogs' but are usually darker in colour and have a twisted, tapered end. Droppings are usually found in small scrapes in the ground called latrines.

Phil Farrer

Badger's sett entrance. Natural England

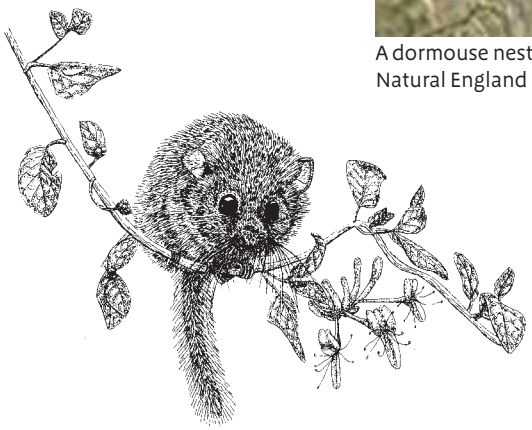
Badger Droppings. Natural England

Dormice

These cute rodents are present on the site although they are rarely seen as they are nocturnal and spend most of their lives up in the trees. However evidence that they are around can be found, usually in the form of nuts. Take your group on a "nut hunt" in areas of hazel scrub to see if you can find any remainders of a dormouse dinner! If you do find any please let us know your results. Note that on a dormouse nibbled nut there is a smooth inside surface and the teeth marks are angled round the nut surface. Wood mice leave corrugated tooth marks on the inside and outside surfaces.

A hazel nut nibbled by a dormouse. Natural England

A dormouse nest box. Natural England



You might come across a nest box which shows that the mice may be in the area. Please do not disturb the boxes as the dormice may be hibernating which they do from November to March or breeding from April. You may be lucky enough to find a dormouse nest which is a ball of leaves and branches with no obvious entrance hole. It is illegal to handle dormice without a licence.

Moles

The Mammal Society

Moles are one of the easiest animals to find evidence of. You will see mole hills in different areas all across the site; they are especially common in the upper fields just across from the car park on the south side of the motorway. Moles use their fore limbs to dig, cutting soil from the sides of the tunnel with alternate strokes. A molehill is formed when the mole turns round, scoops up accumulated soil with its fore limbs and pushes it along a previously dug side tunnel leading to the surface.

Grey Squirrels

Grey squirrels are very common and can frequently be seen around the reserve. To look for evidence of grey squirrels you will need to look high up in the trees for their dreys (nests) or down on the ground for nut shells.

A drey

A hazel nut split open by a grey squirrel

Invertebrates

Ants

You will notice that much of the chalk grassland on the reserve is covered in grassy mounds of varying sizes. These mounds are the home of the Yellow Meadow Ant which will live and breed in them.

Ant's Eye View: A fun addition to looking at the ant hills is to lay a piece of string on the ground across or around an ant hill. Then using small magnifying glasses, encourage the children to kneel down close to the ground and follow the string to get a view of the surface as the ants see it, you may even spot some of the ants going about their business!

Leaf miner

A leaf miner is an insect larva of one a number of insect groups. The larva feeds inside the leaf. Evidence of this is common on brambles on the reserve.

Be a wildlife super sleuth
with
Detective Shearlock Woolly!

Your Assistant Detective Name

The evidence: Draw a quick picture of the evidence you have found

The suspects: Which animal do you think left the evidence? (There might be more than one suggestion)

What do you think the animal was doing?

Was it moving in a certain direction? (eg towards a wood)

Are there any others clues in the area?

Making casts of animal tracks

This activity can either be done at school before visiting the site on any tracks you find around the school grounds, or you could bring the equipment to the site and do it here. Casts are fun to make and once you have done one cast it will make identification of that track easier. You can also use the plaster casts to make imprints in clay or plasticene for use in art projects, and you could build up a collection for display at school.

How to Make a Cast:

You will need:

- ✔ Plaster of Paris, also known as white fine casting plaster – you can get this at low cost from your local builders merchant
- ✔ Strips of thick cardboard
- ✔ A couple of paper clips
- ✔ An ice cream tub
- ✔ A stick or old ruler for mixing
- ✔ Spoon
- ✔ Water
- ✔ Newspaper or bubble wrap.

1 Find a good, sharp footprint, prints in mud or fresh snow work best.

2 Use the cardboard strips to create a wall around the print leaving at least 2cm between the edge of the print and the wall. Make sure there is room for a depth of around 3cm of plaster. Fix the wall tightly together with paper clips.

3 Make up the Plaster of Paris by first putting enough water in the container to fill your mould. Next, scatter plaster on top of the water until no water remains. Use a spoon to handle the plaster as it will irritate your hands. When all the water has been absorbed, stir the mixture gently, trying to avoid stirring air into it. Allow the plaster mixture to settle for a moment and tap the sides to dislodge air bubbles.

4 Pour the plaster into the mould to a depth of at least 3cm, the cast will be too fragile if it is any shallower than this.

5 Leave the cast to set; this should take around15-20 minutes depending on the weather. You can test if it is ready by gently touching the surface, if it is hot then the chemical reaction is still going on, if it is cold then the cast is set and it is ready to remove.

6 Carefully dust off any loose soil and wrap the cast in newspaper or bubble wrap to protect it.

7 When you return to school clean the cast with a damp cloth or soft brush and paint the cast to accentuate the print.

Flowering plants

The activities in this section are best carried out between May and early September as this is when most of the wild flowers are in bloom.

Classroom activities

Using the diagram included in this pack (and on the CD for use with projectors) introduce the key parts of a flower and explain their roles. Draw a simple picture of a flower on the board and ask the children to label the parts. Look at and draw flowers found in the school grounds and identify the parts.

Who am I?
Time: 20mins

Curriculum link
Sc2: 3d, En1:4a

After explaining the roles of the different parts of the flower try this drama exercise where the children have to pretend to be those different parts. Have a pile of useful props handy for the children to choose from and use the cards from the Resources CD to give one at a time the children who are acting. The rest of the class have to guess what each part is.

Part	Part Function	Props
Petal	To attract insects, they may be colourful and may be scented.	Bottle of perfume Colourful item if clothing eg scarf or hat
Stigma	Sticky so pollen can attach to it	Glue stick
Style	Raises the stigma away from the ovary.	
Ovary	Protects the ovule and once fertilisation has taken place it will become the fruit	Plastic fruit, large piece of bubble wrap.
Ovule	Like the egg in animals and once fertilisation has taken place it will become the seed.	Clear plastic bag full of seeds.
Receptacle	This is how the flower is attached to the stalk and will sometimes become the fruit. (eg Strawberry)	Plastic or real strawberries. Thick rope
Stem	Supports the flower and holds it up for insects.	Fake flower head
Nectary	Where sugary nectar is held to attract insects.	Bag of sugar
Sepals	Protect the flower when it is in bud	Fake flower, bubble wrap
Filament	The stalk of the anther	Sign saying pollen
Anther	They contain sacs of pollen which brushes onto insects when they enter the flower	Soft toy insect eg bee or a picture of one. Sign saying pollen.

On reserve activities

Perfect Pollination!
Time 20-30mins

Curriculum link
Sc2: 3d

This is lively game in which the children are flower parts or insects, bringing to life the process of insect pollination. The game is explained in the resources section of this pack. Choose a large, quiet, relatively flat area of the grassland for this game; try the fields opposite the Cowleaze Wood car park.

You will need:

- ✔ A simple diagram of the parts of a flower
- ✔ Small yellow balloons (to act as nectar)
- ✔ Lots of pieces of Velcro, equal numbers of 2 different colours, ideally yellow and orange, approx 10 cm strips so they can be seen.
- ✔ A headband with "antennae" on it to represent the insect, or a simple headband saying "insect" or "bee" It is also useful to have headbands saying what the different parts of the flower are, these are available in the resources section of this pack.

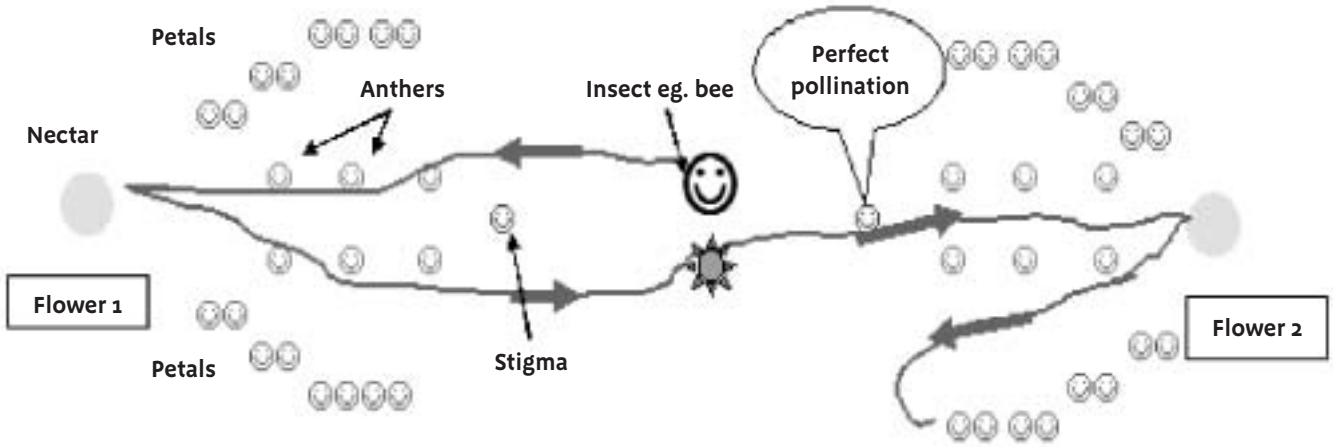
How to Play

1 Arrange the class as shown in the diagram below. You will need a teaching assistant or a large basket to hold the balloons and be the nectary. You will need two girls to represent the female parts of the flower (the stigma) and 12 boys to represent the male parts (the anthers). Each set of anthers is given a different colour of Velcro strips. The rest start off as the petals but take it in turns to become insects as the game progresses.

2 A child is chosen to be the first insect and the red line on the diagram shows the route that the insect should take. The insect runs towards the nectar but gets tagged along the way by the anthers who attach pollen to them in the form of Velcro. They collect the nectar and then return to the centre, getting tagged by any anthers who didn't tag them on the way in.

3 At the point represented by the green star the teacher should stop the insect and ask them where they might go next, do they think that the insect might still be hungry for more nectar?

4 Of course they will, so this time they go on to flower two where the stigma tags them, removing the Velcro and calling out "Perfect Pollination!" Once again the anthers tag them but this time the colour of the pollen is different. Explain that sometimes flowers can be pollinated with their own pollen but never the pollen from different kinds of flower.



Wild Flower Investigators!

Time: As long as you like, this may be something you do on a walk around the reserve so you come across a variety of different species.

Curriculum link
Sc2: 3d, 4a, 5a,
Geography: 7c

You will need:

- ✔ The Common Wildflower Identification pages from this pack, also found on the Resources CD. It is a good idea to laminate these.
- ✔ The flower structure diagram page, also found on the CD. (Laminate)
- ✔ Magnifying glasses
- ✔ Any wild flower books or keys – try the Field Studies Council Guides.

The best time to come to Aston Rowant NNR to look at wildflowers is spring and summer when we have a wide array of different species to look at. Using magnifying glasses closely examine the different flower structures and encourage the children to look for they key parts that they have learned in class. Please be careful when picking flowers, if you need to just use one or two of the more common species.


Wood sorrel.
Natural England

It is not essential for the children to be able identify any of the wildflowers at this stage but it is a good idea to teach them two or three of the easier species, such as the fragrant herbs or the bellflowers which look like their names.

Those that are most useful for looking at the classic flower structure include Harebell, Cowslip, Dog Rose (be careful of thorns), Clustered Bellflower and Rock Rose. These can be found on the chalk grassland and in the case of the Dog Rose, in the scrub and hedgerows. In the beech woods on the north side of the motorway you might find Wood Sorrel (see illustration, trefoil-like leaves, and pale pink / white flowers) and Bluebells (April - June).

Show the diversity of flowers by looking for other flower structures such as:

- Umbellifers – Members of the carrot family. Lots of small flowers are arranged in a compound flower head called an "umbel", this is easy to remember by saying that it is a bit like an umbrella! There is lots of wild carrot on the site to use as an example.

- Peaflowers – Members of the pea family such as bird's foot trefoil, which is common on the site.
- Composite flowers – Members of the daisy family such as ox-eye daisy.

Wild carrot. The Chilterns Conservation Board

Ox-eye daisy. Natural England

Bird's foot trefoil. Natural England

Be sure to explain to the children that many of the flowers on the site are rare and we should not pick too many of them but leave them alive so that they can provide food for insects and go on to produce seeds.

Also look at ways of attracting insects for flower pollination such as guide lines on petals and bright colours.

Drawing Wild Flowers

Curriculum link
Art & Design: 1a,c, 5a, Geography: 2b

You will need:

- ✔ Clip boards
- ✔ Paper
- ✔ Pencils
- ✔ A good selection of colouring crayons.

The wild flowers on the site are so stunning; this is a perfect opportunity for an arty moment! Some of the best wild flower fields are labelled on the site map but in the summer the whole of the grassland is covered in wild flowers.

When drawing the wild flowers children should start by focussing on a particular flower head. Choose a field that has a particularly good selection of flowers and ask the children to find a flower they would like to draw, and sit by it. Then hand out the art materials and allow plenty of time for the drawing.

The hills at Aston Rowant National Nature Reserve provide great views across Oxfordshire and this is a great way of giving the feeling of being with nature.

Blackbirds and Worms! Curriculum Link: Sc2: 3d
Time: 10-15 minutes

We all know that it is the blackbirds that eat the worms and not the worms that eat the blackbirds! Bear this in mind when playing this lively game of true or false!

Make sure that you choose a flat field. It is a good idea to look at the questions before you do the previous wild flower activities to make sure you cover most of the questions, leave some of them unanswered as something to think about, then give the answer during the game.

How to Play:

Split the class into two teams and line them up opposite each other, about 10 metres apart. One team is the blackbirds, the other is the worms.

Read out the following series of true or false questions. They can be read out in any order but make sure you mix up the true and false questions well. If the children think the answer is true then, true to life, the blackbirds go after the worms! Therefore the blackbirds should run to the worms' side, if they think it is false the worms should run to the blackbirds' side.

If anyone runs the wrong way then they have to join the opposite team. The winning team is the one with the most members at the end of the game. If nobody goes the wrong way then they have been listening really well and they are all winners!

True	False
Grasses have flowers too.	There are no bluebells in the woods at Aston Rowant Nature Reserve.
Wild carrot is a type of umbellifer.	Rock roses only live on rocks.
You should never dig up wild flowers, it is the law.	Monkeys pollinate some flowers at Aston Rowant Nature Reserve!
Insects visit flowers to drink their nectar.	Moths cannot pollinate flowers because they only fly at night. (Some moths fly in the daytime)
A plant produces flowers before it produces seeds.	All flowers rely on insects to pollinate them.
Some petals have tiny lines on them to guide insects into them.	It is the petals that turn into the fruit.
Some orchids grow in Britain. (There are many on the Reserve)	There are no blue flowers.
Trees have flowers too.	Insects visit flowers to eat pollen.
Scabious is a type of flower	Pollen is found in the ovary.
Flowers are colourful to attract insects.	Butterflies don't like flowers!

Some common wildflowers of Aston Rowant National Nature Reserve


Dog rose. Natural England


Bluebell. Natural England


Cowslip. Natural England


Harebell. Natural England


Wild basil. Natural England


Clustered bellflower. Natural England

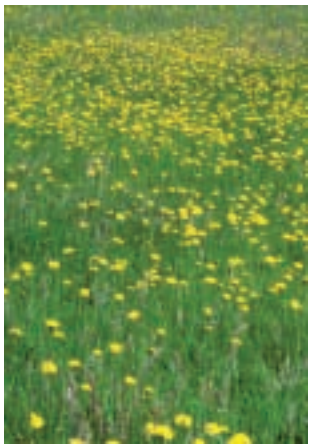

Wild marjoram. Natural England


Rock rose. The Chilterns Conservation Board


Wild thyme. The Chilterns Conservation Board


Small scabious. Natural England


Wild carrot. Natural England


Hawkbit. Natural England

It's quite an adventure being a seed!

Recommended Season: Autumn

Section curriculum links: Sc2: 3d, Geography: 5b, 7c

Classroom activities

It is best to move on to this section after completing the section on pollination or covering the topic yourself in class. After explaining the concept that pollen is deposited on the stigma of another plant either by insects or wind, move on to explain the process of fertilisation. The pollen grain produces a tube which grows down through the style and into the ovary where it enters the egg. The egg then becomes a seed.

Use the "Fill in the Gaps" worksheet on the CD to test the children on their knowledge of seed formation.

Seed Dispersal:

It is important that seeds find a place to grow where they have water, soil, warmth and light. Show the children different pictures of seeds such as those shown on the resources CD. Ask them to suggest how they think the seeds are dispersed. You can use the resources on the CD as worksheets or put them up on a whiteboard.

Encourage the children to suggest which animals are involved where relevant, or how the seed is designed to be easily carried by the wind.

- Hawthorn berries, blackberries, apples: the seed is eaten by the animal or bird as part of the fruit but it passes though the digestive system undamaged and is released onto the ground in the creature's droppings.
- Hazel nuts, acorns: they may be buried by squirrels to be eaten at a later date. Often the squirrel will forget where they are buried and the seed will have the chance to germinate.
- Sycamore key, ash keys: These seeds have a special "winged" design that helps them to be carried by the wind.

On reserve activities

Nutty Squirrels!

Time: 10mins

You will need:

✔ Nuts, in shells works best. Ensure that you consider any allergies.

When you get to the reserve, start at the outdoor classroom seating area in the beech woodland on the north side of the motorway. Give each child a small handful of nuts and ask them to go and hide them, somewhere out of sight in the wood close to the outdoor classroom area. At the end of the day return to the seating area and ask the children to go and find their nuts, there is a good chance that at least one will forget where they put them, or that a real squirrel will have taken them!

This activity will show that when a squirrel buries nuts it doesn't always find them again and some of those nuts germinate and become trees.

Seed Scavengers!

Time – As long as you want to allow.

Take your class on a seed scavenge around the reserve! Look for different types of seeds and make up a collection to show the great variety of tree and flower seeds that nature produces.

For example:

- Seeds with wings – sycamore,ash.
- Seeds with burrs – burdock, agrimony.
- Seeds in fruits – bramble, wild strawberry.
- Seeds that are known as nuts – hazel, beech (also known as beech mast), horse chestnut (conkers)

Try collecting seeds in an egg box or a selection of small containers.

Seed Tig.

Time - 20-30 minutes.

The pupils learn about the trials of life as a seed by becoming seeds themselves in this lively game!

You will need:

- ✔ Thick elastic for attaching to headbands so they fit round pupils' heads.
- ✔ 4 x headbands for conditions: air, water, soil, sun.
- ✔ Seed headbands: make as many as needed for the rest of the class
- ✔ 1 x headband for "Flower Bed"
- ✔ 1 x headband for "Squirrel Energy"
- ✔ 3 x "Squirrel" headbands.
- ✔ 30 (or however large your class is) x tokens for each of the 4 conditions: so 30 x air tokens, 30 x water tokens etc) Make sure each set is a different colour and keep them in plastic pots such as large yogurt pots.

This game should be played on a large flat area such as those recommended on the map. Some fields may contain occasional bramble plants or scrapings made by rabbits; check for these before you start and warn the children to look out for them.

1 Start by discussing with the children what conditions seeds need to germinate and grow into plants. Encourage them to come up with the 4 key conditions of air, water, sun and soil and give the headbands and pots of tokens to the children that come up with the respective answers.

2 Then tell the class that the rest of them are going to be seeds and give out the seed headbands.

3 Seeds need somewhere to grow so explain that you need a "Flower Bed". This can be you or a teaching assistant.

4 Position the 4 "conditions" in 4 corners of the playing area. The area can be as large as you like but either take a whistle or make sure that the pupils are not too far away to hear you. It is important that the pupils being the "conditions" do not move from their positions unless told to. Gather the rest of the class into a circle in the centre of the playing area.

5 Tell the children that they must run round and collect one of each token before running to the Flower Bed.

6 In this round of the game all of the children will make it back to you with 4 different tokens without any problems. This is great! All the seeds will grow into new plants! However you then need to bring the class together and explain that sometimes seeds get eaten by animals and birds, especially if they are nuts or berries. The animal in this game is a squirrel. Give a squirrel headband to the child that made it back to the flower bed first and explain that you are going to play the same game again only this time the squirrel has to "tag" the seeds before they make it back to the Flower Bed. If they get tagged before reaching the Flower Bed, they must go straight to the newly introduced "Squirrel Energy" person.

(A teaching assistant.) Swap round the "conditions" children if you like to give them a chance to run around.

7 Make sure that you keep an eye out for any cheating and ensure that the children stay in the playing area.

8 This time only some of the seeds make it to the Flower Bed, the rest become "Squirrel Energy". Play the game again only with two more Squirrels!

9 You will find that this time there are lots of seeds becoming "Squirrel Energy!" A good point to explain here is that sometimes a squirrel will bury some nuts for the winter and then forget where they are, so those seeds still get to germinate. Also remind the children that seeds inside fruit can be eaten by animals and birds and then come out in their droppings undamaged, so they can germinate too.

Seed Gathering!

Time: as long as you like, but around 50 minutes / 1 hour allows for a good introduction, and plenty of time for lots of seed gathering.

Every year in September / October, The Tree Council holds a campaign called Seed Gathering Season! They will send you lots of information as well as free seed gathering bags! The aim is to encourage people to gather seeds, and grow new trees. You could collect a small selection of seeds from the reserve and have a go at growing trees back at school, to be planted either in your grounds or back on the Reserve. (Please contact us before you do this.)

Here at Aston Rowant we have a good variety of trees with many different types of seed. However we also embrace seed gathering season by looking at our wildflowers!

- Many of our wildflowers are in seed in September / October and we can help to show you what to look for.
- Children can work in small groups looking for particular seeds.
- We have some areas on the reserve that are fairly new and undergoing restoration to become more like the flower-rich grassland that covers large areas of the site.
- We can mark out an area in these fields for your school to adopt and spread wildflower seed in.
- You can then return in future years to see the difference you have made!

Heritage Lottery Fund

This pack contains a series of National Curriculum linked activities suitable for Key Stage 2 pupils. Some activities are adaptable for younger or older age groups if necessary.

The pack is divided into a series of key topics, each with activities suitable for use in the classroom and on Aston Rowant National Nature Reserve.

A detailed map of the site is included within the pack to help you find your way around. There is also a CD containing worksheets, useful images and any additional resources you might need for the activities.

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