MINIBEASTS, HABITATS AND SOIL

Learn more about pollinators and build soil fertility in an orchard.

LEARNING OUTCOMES

KS2 Science (year 2)

- identify and name a variety of plants and animals in their habitats, including micro-habitats

KS2 Science (year 3)

- understand the role of pollinators in plant reproduction
- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

KS2 Literacy

- Spoken language: maintain attention and participate actively in collaborative conversations, staying on topic and initiating and responding to comments

RESOURCES

- Orchard with young or mature trees, cagoules for wet weather work, first aid kit
- Camera or iPad – check device and usage permissions
- I spy a habitat game – laminated list x 15 and white board markers
- Minibeast hunt – laminated Minibeast record sheet x15, visual minibeast identification guide e.g. Field Studies Council laminated guides x 21, white trays for observing invertebrates
- Windfall collection – trugs, gloves x30

WALK TO THE ORCHARD (10 MINS)

Make sure that the children walk in pairs and check they know who is person 1 and who is person 2. They'll work with this partner during the lesson. They'll work in groups of four for the minibeast hunt.

When you arrive at the orchard, make your way to the centre.

Where do you think you are?

Why are there lots of trees here? What kind of trees do you think they are? Why do you think they're planted like this, with big gaps between each tree?

Orchards are a group of five or more trees, planted with the intention of providing food. They often have quite big spaces between them to allow people to harvest the fruit easily and to allow light to reach all the fruit.

In order to help these fruit trees grow well, we need to understand how they work – particularly how fruit develops and how minibeasts can help.

Supported by The National Lottery® through the Heritage Lottery Fund
heritage lottery fund
PEOPLE'S POSTCODE LOTTERY

I SPY A HABITAT GAME (10 MINS)

How are insects useful in an orchard?

What is an insect? What is the role of insects? What kinds of insects do you think are pollinators?

Fruit is formed from flowers that usually must be pollinated. This can be done by the wind, but in an orchard, when we're talking about 'top fruit', it's usually done by a range of insects. The most well known of these is bees, but a surprising number of other insects also do this – some moths, flies, beetles, butterflies, wasps and sometimes even ants.

Where do you think they live? What do you think they need?

What's the name for the different types of place that insects (or other animals or plants) live? Can you see any habitats from here? Let's have a quick race to see how many we can find.

- Ask person 1 to come and take a laminated I spy a Habitat sheet and white board marker
- Send them off to find as many habitats as they can.
- After 5 minutes, signal for the class to come back together and get them to tally up their score. (70 max)
- Check some of the more unusual habitats are present on the site – e.g. boggy area

MINIBEAST HUNT (15 MINS)

We're going to focus in on some of these habitats and see if we can find who is living there. We'll look for actual minibeasts and evidence of them being there. You're going to work in groups of four.

Model using the minibeast tally sheet on one of the fruit trees.

- Show how you carefully turn leaves over and look carefully at the leaves to see evidence of invertebrates. (Invertebrates – just means animals without a backbone. Another word for minibeasts) Show how you'd look on the bark and under the tree. Show how you'd record your observations.
- Show how you use a pictorial guide to identify the minibeast and record it on the record sheet
- Divide the children into groups of four. Give each group one habitat to focus on, one white board pen, one hand lens and at least two visual identification guides.
- After 10 minutes call the children back together and ask them how they did.

Did we find any actual pollinating insects, or evidence of them?

Why do you think that is? Where do you think they are at this time of year?

Butterflies *Some hibernate as adults, hiding in crannies, behind bark, somewhere dry - Brimstone, Comma, Peacock and Small Tortoiseshell. Some overwinter as pupae – lumpy crysalises – Small White and Orange-tip.*

Hoverflies *Some hibernate as adults, hiding in crannies somewhere dry – Drone fly. Some hibernate as larvae in the soil. Hoverflies that hibernated as adults will emerge early in the spring (March) and lay their eggs on aphid infested plants. They will need lots of nectar to keep them alive in early spring and somewhere tube-shaped to hide in winter.*

Bees *Some hibernate as colonies (e.g. Honeybee and Buff-tailed Bumblebee) but may come out to forage if it's warm enough. Some solitary bees (e.g. Red mason bee) will overwinter as a larva inside a tube-shaped nest. In the spring the adults come out to look for food. Bees need an almost year-round supply of nectar and solitary bees need somewhere to shelter, ideally tube shaped.*

Supported by The National Lottery® through the Heritage Lottery Fund
heritage lottery fund
PEOPLE'S POSTCODE LOTTERY

WINDFALL COLLECTION (15 MINS)

What other habitat is there that we haven't mentioned?

It's a habitat we couldn't do without, and we're standing on it right now. Soil is one of the most important habitats in the orchard. Why do you think that is?

*Our fruit trees take nutrients and water from the soil so it's important to keep it in good condition. The soil is full of minibeasts, nutrients, air and water – together making up a soil food web. The soil food web has many benefits including: *Passing nutrients and water around the system and making them available to tree roots to take up; *Breaking up soil so that it has a good structure; and *Acting as a sponge and stopping rain water running away from the site too quickly.*

What could we do to help the soil?

What does soil need to be in good health? How could we feed the soil? What kinds of things can you see around here that might feed the soil?

Explain that we're going to collect windfalls and put them on the compost heap. The soil from the compost heap is later going to be placed around the base of the fruit trees as a 'mulch'. Mulch is organic matter placed over the surface of soil such as leaves, compost, straw, newspaper or wood chips. It's yet another habitat.

- Hand out gloves and trugs
- Warn children to pick up apples cautiously in case there are wasps in or on them
- Show children how to put the apples onto the compost heap.
- After 10 minutes, call the children back into the centre of the orchard.

TIME TO RECAP (5 MINS)

What have we learned today?

Why did we collect the windfall apples? What can you remember about soil? What minibeasts did we find in the orchard? Who can remember what habitats we found?

WALK BACK TO THE SCHOOL (10 MINS)

Supported by The National Lottery® through the Heritage Lottery Fund
heritage lottery fund
PEOPLE'S POSTCODE LOTTERY

Names

I SPY A HABITAT

Habitat	Notes	Points
Pond Provides drinking water for birds and mammals as well as a home for insects and amphibians.	Score up to 10 points – wild-looking ponds score more	
Standing water e.g. water butts or water storage tanks. These would provide water for insects, birds or mammals.	Score 5 points	
Boggy area This might be an area around a wild pond, which is allowed to stay damp.	Score up to 10 points	
Short grass Any recently mowed grass between trees.	Score 2 points	
Long grass This might be left at the edges of the orchard.	Score 4 points for grass that is left long enough to flower and seed. Score up to 8 points if it has wild flowers and is not treated with weed killer, pesticide or fertiliser.	
Wild flowers (or evidence of flowers) These might be in flower beds, pots or growing in wild areas. Some people might call them weeds!	Score 3 points for a small area of wild flowers (smaller than a table top). Score up to 10 points for larger areas with lots of different types of flower	
Flower beds Garden flowers may be bred for their looks rather than nectar, and are often not so good for wildlife.	Score 2 points	
Rocks Piles of rocks provide plenty of hiding places for small creatures – rocks in the sun might even attract sun-bathing lizards and snakes.	Score 5 points	
Rotting wood A pile of logs left to rot provides a great home for many insects and fungi	Score 5 points	
Trees and shrubs with fruit or seeds These provide food in the autumn and winter, especially for birds. They can also provide places for birds to nest.	Score up to 8 points depending on how many types of tree there are. Score an extra 5 points if you have a thick hedgerow, providing food and shelter.	
	Total	

THE ORCHARD PROJECT

Supported by The National Lottery® through the Heritage Lottery Fund

heritage lottery fund

PEOPLE'S POSTCODE LOTTERY

Names

MINIBEAST RECORD

Habitat _____

Minibeasts found (use the hand lens to look at these and the identification guide to confirm their identity)

Evidence of minibeasts (e.g. damaged leaves, slime trails, webs etc.)

THE ORCHARD PROJECT

Supported by The National Lottery® through the Heritage Lottery Fund

heritage lottery fund

PEOPLE'S POSTCODE LOTTERY