WOODLAND TRUST

Pupil worksheet
Spreading the species

It is important to the survival of a species that the seeds of a plant are dispersed some distance away from the parent plant. This allows the new seedling a chance to grow without having to compete for light, water and nutrients with its parent plant or other seedlings. Generally, plants produce many seeds. This is because even if a seed germinates, it still has to withstand many hazards as a seedling. These include being eaten, diseased and trampled. The chances of growing big enough to mature and make their own seed are actually quite small. If each plant produced only one seed each year, the species would die out very quickly.

There are many different shapes and sizes of seeds. They all contain an embryo, a food store for germination and a protective coat to resist all those hazards. Sometimes they are hidden inside a fleshy, fragrant and attractive fruit such as an apple or grape. Some are small, light and less unattractive. How they are packaged has something to do with how they are dispersed.

Many seeds are dispersed by animals. This may be by being eaten as a tasty fruit. The seeds inside the fruit usually survive as they pass all the way through the animal. They might also be helped to germinate by the content of the animals droppings as this acts as a fertiliser. Examples of this type are blackberries and hawthorn berries.

Other seeds like acorns and hazelnuts are collected and buried by squirrels and jays as a winter store. Sometimes they forget to dig them up, so new trees can grow at these locations.

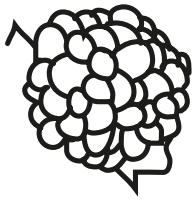
Some seeds, like those from the burdock plant, are covered in small hooks or hairs which get caught on the fur of passing animals. The animal may travel a long distance before the spiky pod comes off.

Other seeds are ripped off the plant by birds. These include bulrush and thistle seeds which are helped by sparrows and goldfinches.

One of the other main methods of dispersal is by the wind. Seeds may have wings or fluffy hairs to catch them in the wind. The familiar winged sycamore seed can be seen to travel a fair distance as it spirals like a mini helicopter to the ground. Dandelion seeds float in the breeze on the gentlest of air currents as they seek a spot away from the parent plant.

A few seeds, like gorse and broom, have dramatic, exploding pods which rely on heat to trigger them. The poppy has a seed head like a pepper pot to sprinkle its seeds around the plant.

Seeds can also be dispersed by water or heat. Alder, much like coconuts, often float for long distances after leaving the parent tree. With their large food store and tough shell, they can cross oceans before they find somewhere to germinate.



blackberry

acorn

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Answer the following questions, using the information provided.

1. Why is it important that seeds can move away from the parent plant?

2. Why do most plants produce a large number of seeds?

3. Find out the meaning of the following words and write these below

a) disperse

b) embryo

c) germinate

d) protective

e) nutrients

Make a seed dispersal chart by completing the one below. An example has been provided in each group to get you started. You may wish to visit a website or look in a book to help you – ask your teacher to suggest which ones might be useful.

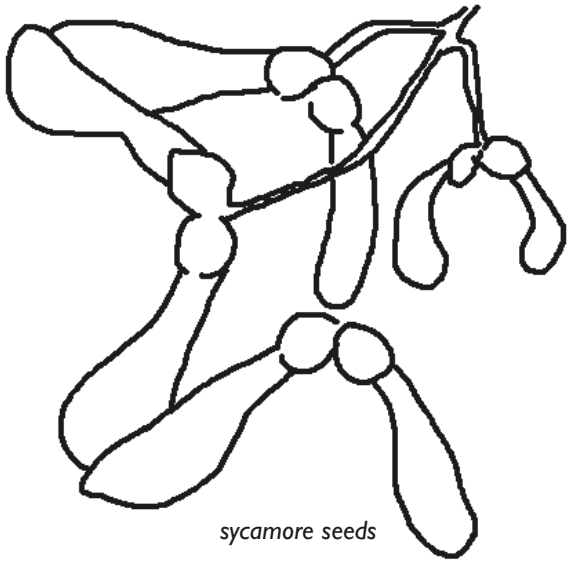
Spiky fruits	Tasty fruits	Parachutes	Wings	Others
beech nuts	hawthorn	dandelion	sycamore	broom (splits)

Teacher activity idea
Spreading the species

Woodland activity (can take place in a park or school grounds)

You will need lollipop sticks or the equivalent.

Find a solitary tree or a group of trees that are not surrounded by the same species. The chosen tree needs to have fairly large seeds so they can be tracked easily. A good example is sycamore with its wind-borne, 'helicopter' seeds. You could also use seeds from the ash tree.



sycamore seeds

Show the children an example of the seeds that they will be looking for. Warn them that the seeds may be in a worse state than the example so they will need to look carefully on the ground.

Working in pairs, set the children off in different directions from the base of the tree (advise they need to be in view at all times).

Set a time limit for the quest (suggest 15-20mins)

Pupils push the lollipop sticks into the ground to mark where the first seed is found and then explore further away from the tree until they find another and move the stick to this position. At the end of 15-20 minutes they measure in paces the distance from their stick to the tree trunk.

These distances could be recorded in rough during the activity and then made into charts or graphs later using an ICT data handling package such as Chart Wizard on Microsoft Excel.

The Quest could be repeated with other species to see how efficient different trees are at spreading their seeds.

For discussion:

Why won't we be able to tell with some trees eg their seeds may be carried several miles by animals or buried to be used as winter food stores by squirrels.

How did the shape of the seed affect how far it travelled?

How might a change in woodland inhabitants affect seed dispersal?

How might different weather conditions affect it?

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Teacher activity ideas
Spreading the species

Creative Writing

After the children have observed and talked about the seeds quest for survival, they can develop their ideas as a story. Suggest titles such as:

'The journey from my tree to a new life'
'How I made it on my own'
'Setting up my own home'
'If I was a seed, I would like to be….'

A suggested story planning frame work features below. Ask children to write a paragraph for each stage:

- Letting go of my tree – how you became detached
- How I got away – who/what transported me
- Problems on the way – what hazards I had to get through e.g. being trampled, eaten etc
- How I felt when I found my new home
- Why I like being here

Design Technology

Collect examples of different seeds and discuss how they work. Recreate similar structures using card, elastic bands etc. An example of a craft activity is given below.

Model spiky fruits

Make your own spiky fruits to show how some seeds are carried by animals on their fur.

You will need:

strips/dots of self-adhesive Velcro
old tights
crumpled paper
wool or string for tying

- Cut a piece from a pair of old tights approx. 10cm x 10cm. This will be the casing of your fruit
- Stuff with small pieces of crumpled paper. These are the seeds
- Pull the edges together and tie with wool or string
- Cut a length of Velcro and stick a piece of the 'hooky' side around the 'ball'
- You now have your own spiky fruit to play with.

Try sticking your fruit on different parts of your clothing.

Which part of your clothes does it stick to best?

Try socks/tights, sweatshirt, trousers/skirt and shirt.

Which part of an animal do you think it would stick to best?

Try running outside with the fruit on different parts of your clothing. How long does it stay on each part before it falls off?

Discuss the findings with the children and how these might apply to animals carrying fruits.

Other online information:

Visit www.offwell.free-online.co.uk, enter 'seed dispersal' in the search box.
Go to www.cas.vanderbilt.edu/bioimages for photographs of different seeds. Click on 'plant features' then 'fruit & seed dispersal'

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