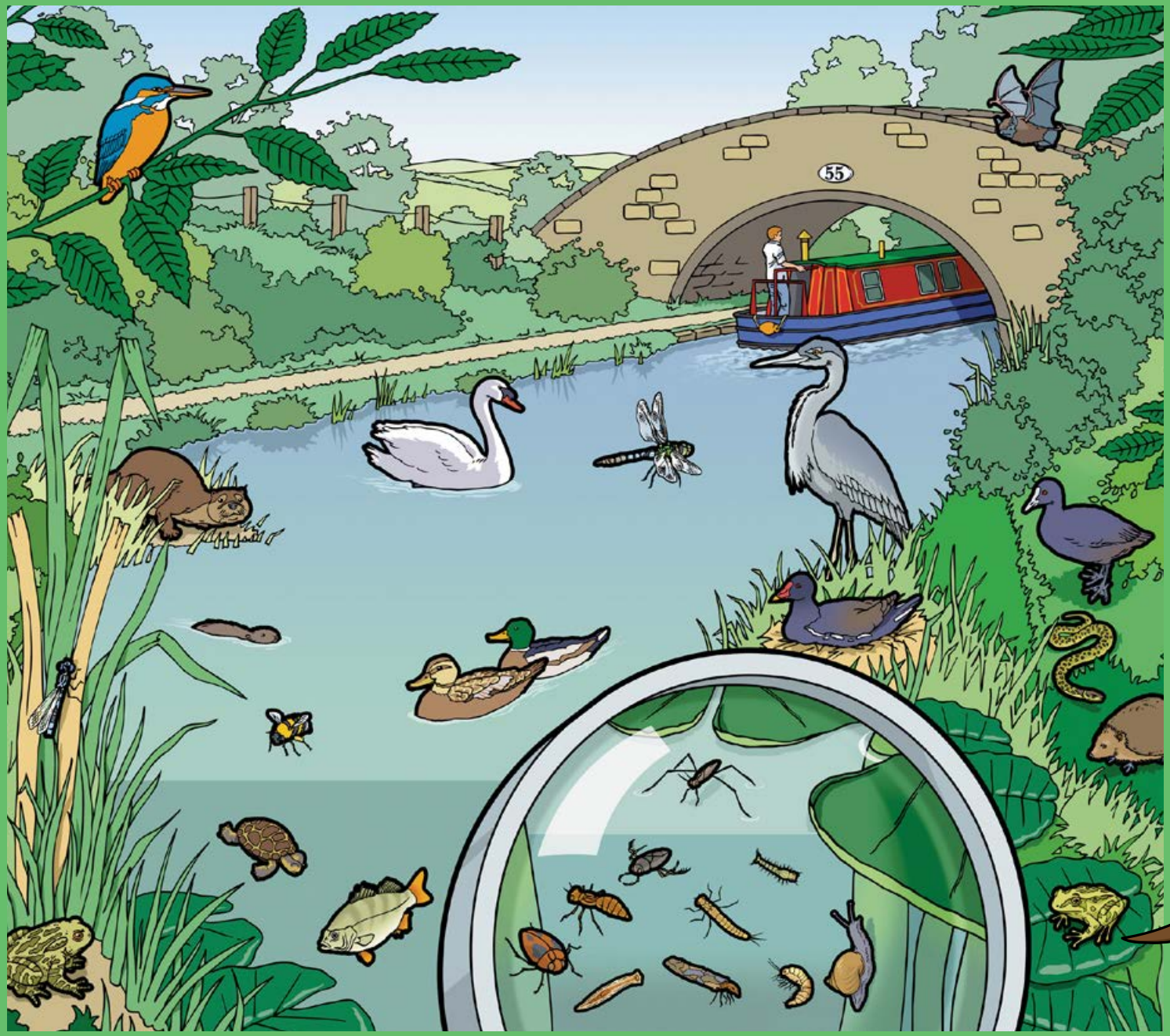
Canal & River Trust

Explorers

Canal and River Habitats Topic Pack



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Contents

Habitat challenges and activities

Habitat challenges

These will help you take a closer look at different habitats whilst you are out and about by the water.

What makes a hedge?
Measure a length of hedge. Count and identify the plants in each metre.

What's living in the hedge?
Use a white sheet under a hedge to collect and identify minibeasts.

Flower power pollination
Examine a flower head carefully to identify the petals, stigma, stamen and pollen.

Seed dispersal
Collect some seeds. Draw and sort them according to how they are dispersed.

Minibeast hunt
Mark out a quadrat of ground. Collect and identify the minibeasts. Compare with a quadrat in a different place.

Activity sheets

You can do these activities in doors.
All you need are paper, pencils, scissors and glue.

Whose habitat is this?
Draw an animal which lives in each habitat.

Adaptation – beaks, feet and wings
Decide how birds are adapted to help them feed, move and shelter.

Bird brain
Invent a bird and show how it is adapted to its habitat.

Classification – sorting minibeasts
Use a branch diagram to sort and identify common minibeasts.

Eat or be eaten
Sort animals and plants into producers, consumers and carnivores.

Who am I?
Identify different water birds by their description.

Who eats who?
Cut out pictures to make two food chains.

Helicopter seeds
Make a paper helicopter. Who can make the best helicopter?

What are habitats?

A habitat is a place where animals or plants live. It provides the resources needed for living things to survive; food, water, shelter and a safe place to reproduce.

Different habitats

Different plants and animals live in different habitats. Some birds are adapted to live in woodlands. They build their nests in the trees or hedges. They eat nuts and berries which grow on the trees. They can hide from predators in the branches.

Frogs are adapted to a different habitat. They live near water in ponds or rivers. Most frogs breed in water where the eggs are protected from predators. The damp environment keeps their skin moist and they have webbed feet to help them swim. They eat bugs which they find near the water's edge.

A delicate balance

Sometimes habitats are damaged or changed. This can affect the animals that live there by destroying their food source or taking away their cover. Frogs are very sensitive to changes in the environment and many species are under threat as their habitat is damaged by pollution. A small change to the habitat of one plant or animal can have a big effect on other animals in the foodchain.

A waterway habitat – a restored canal and towpath at Loxwood on the Wey & Arun Canal

Mallard ducks live on canals, rivers, lakes or reservoirs.

Activity: Whose habitat is this?

Alien invasions

Sometimes canals and rivers provide good habitats for animals and plants which don't originally come from the British Isles. These non-native species can cause problems for native wildlife. They may have no natural predators in their new environment or they may destroy habitats or eat the food of other creatures.

Children catch an American crayfish at a fishing pool. It is now illegal to release these crayfish into the wild.

A plant out of place

Japanese knotweed is a plant which was originally brought into this country by Victorian plant hunters. It is now a big problem in the wild as it destroys the habitat for native plants. It grows very quickly – more than a metre a month - and its strong roots can even push through concrete. It can regrow from a tiny piece of root so it is difficult to get rid of.

An American crayfish

The wrong creatures

American crayfish were introduced to pools around the country. Many escaped into canals and rivers where they eat the food of British crayfish. They are larger than British crayfish and in some places are now more common.

Japanese knotweed is invasive and destroys habitats for other plants and wildlife.

Fascinating Facts

Scientists are now experimenting with introducing an insect into this country which is a natural predator for Japanese knotweed. It will eat the plant and stop it getting out of control.

Helping biodiversity

What is biodiversity?
Biodiversity is the word used to describe the variety of animals and plants living in a habitat. A healthy habitat will support a rich variety of wildlife. We can help to improve biodiversity by protecting habitats.

Protecting canals and river habitats
People who look after our canals and rivers have to think about the needs of people as well as protecting habitats. Sometimes it is difficult to make things work well for both people and wildlife.

Canals were built for boats to move along. However rain gradually washes earth into the water and mud builds up at the bottom. This stops the boats from moving so every few years the mud has to be dug out. This is called dredging. This has to be done carefully so that plants growing along the edge are not disturbed. This protects an important habitat for birds, mammals and insects.

Engineers need to dredge carefully. They cannot dredge when birds are building their nests or sitting on their eggs or looking after their young. What time of year do you think is the best time to dredge?

A dredger at work on the Birmingham & Fazeley Canal

Adaptations, life cycles and food chains

Adaptations

Adaptation is the way in which the physical features of an animal are adapted to help it obtain food, keep safe, build a home, withstand weather and attract a mate.

It takes time to adapt

Adaptations are produced by evolution over many generations over millions of years. Here are some examples of how animals are adapted to their environment.

The dragonfly larva lives under water. It has adapted to have gills so it can breathe under water. The adult lives above the water. Its body is adapted to be streamlined with two sets of wings so it can hover and fly quickly.

A mallard duck's bill is adapted to sieve tiny particles of food from the water. Its feet are webbed to help it swim.

Activity: Bird brain

Activity: Adaptation – beaks, feet and wings

A goldfinch's long, fine beak is adapted to pick seeds from thistles and teasels.

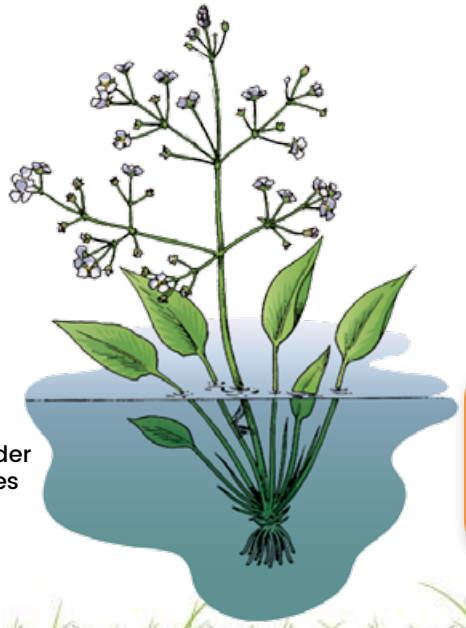
A moorhen's long yellow clawed feet are adapted to help it move through shallow, reedy water.

All about plants

Flowering plants are common on towpath verges and embankments. Plants need the right conditions to grow and reproduce.

The parts of a plant

Roots hold the plant in the ground and take up water and nutrients from the soil. The stem of the plant carries the water and nutrients to other parts of the plant. The green leaves use sunlight to make food for growth. The reproductive parts of the plant are in the flowers. The flowers attract insects which help pollinate the plant to produce seeds which grow into new plants.



Some water plants have their roots under water and the leaves and flowers above water.

The bright yellow centres of these oxeye daisies attract bees and hoverflies.

Plant adaptations

Most flowering plants depend on insects for pollination. They have evolved to have brightly coloured flowers and scent to attract insects to feed on their nectar. The insects pick up the pollen on their bodies and carry it to another flower.

Activity: Flower power pollination

Fascinating Facts

A large oak tree can take up to 400 litres of water from the soil a day. That's a lot of water!

Fascinating Facts

We rely on insects for a lot of our food. Without insects we would have no tomatoes, peas, apples or strawberries.

An emerald damselfly sucks nectar from the flower of a watermint plant.

Adaptations, life cycles and food chains

Life cycles

All living things reproduce. Most plants produce seeds which grow into new plants. Animals have babies which grow into adults. This is called the lifecycle.

Mallard ducks lay eggs which hatch into ducklings which grow into adults.

Dragonflies

Dragonflies have three stages in their life cycle.

The adult dragonfly lays her eggs under water.

The eggs hatch into larva under water. The larva breathes through gills. It grows bigger by eating smaller creatures. It can live for several years as a larva under water.

The larva climbs up out of the water on a plant. Its skin splits and an adult dragonfly emerges. It sits in the sun to dry its wings then it flies away to look for a mate. It may only live for a few days as an adult.

Habitat challenge:
Seed dispersal

Activity:
Helicopter seeds

Fascinating Facts

Fossils have been found which show that there were dragonflies on earth over 300 million years ago.

Who eats who?

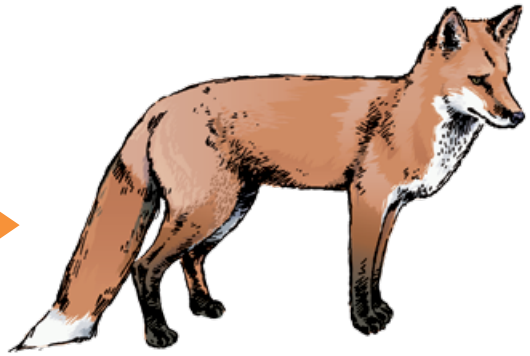
All living things need energy to grow. Most plants get their energy from the sun. Most animals are consumers. They get their energy from eating food – either plants or other animals.

Foodchains

All animals depend on other living things for food. A food chain shows how plants and animals are interdependent. Here is a simple food chain. The arrow means 'gives energy to'.

Hawthorn is a producer. This means it makes its own food using energy from the sun.

A woodmouse is a consumer. It gets its energy from eating plants such as hawthorn berries.



The fox is also a consumer. It gets its energy from eating other consumers. It is a predator hunting and catching small animals like the woodmouse.

Activity: Eat or be eaten

Activity: Who eats who?

This is a simple food chain but habitats are much more complicated. Lots of different animals eat hawthorn berries and lots of different predators eat woodmice. You can show complicated feeding relationships with a food web.

Canal and river habitats

Chapter 3

At home in the water

Canals were built for boats to transport goods from one place to another. Soon after they were built, plants and animals began to move in. Some of the early canal builders put reeds at the edges to make the banks strong.

Rivers are not built, they are natural. Some big rivers have been changed over the years so that boats can use them for transport. Some rivers are too small and shallow for boats to use.

A good place to live

Many canals have become important places for wildlife because they are a managed environment. Even in hot weather canals rarely dry up unlike ponds and rivers. This is because the water level in canals is controlled.

Canals are good habitats for animals and plants that like slow moving, deep water. Some rivers flow more quickly and attract different kinds of wildlife.

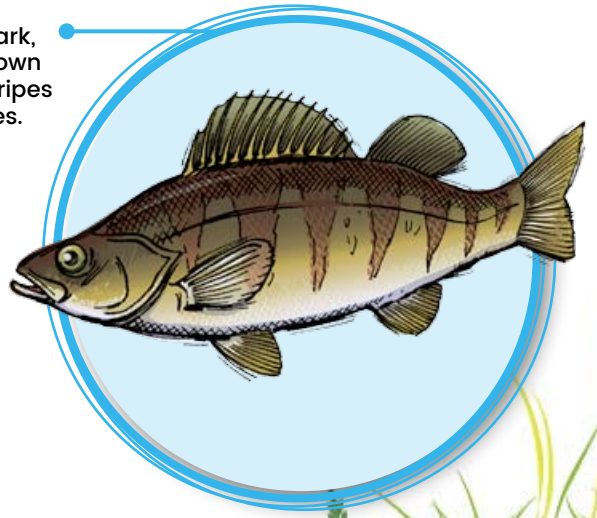
Under the water

Aquatic invertebrates are creatures that don't have a backbone and live in damp places. Dragonflies and damselflies lay their eggs at the water's edge and their larvae live under the water hiding in the plants.

Water beetles and water boatmen are insects that live in deeper water. Freshwater mussels and water snails live in the mud at the bottom of the canal.

Canals and rivers are good habitats for many types of fish. Perch like slow moving water. They eat small fish and insects.

A brown aeschna dragonfly lays its eggs in water.

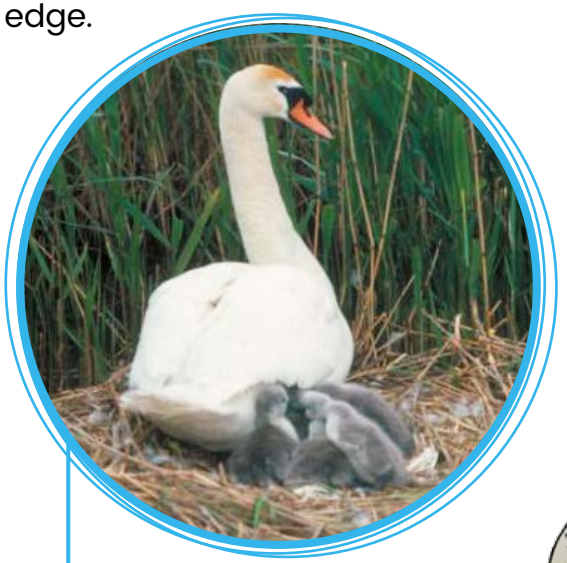


Perch are dark, greenish brown with dark stripes on their sides.

Birds on the water

Swans

Swans are the largest birds you are likely to see on the water. They can have a wingspan of up to 2.4 metres. They build their nests in the reeds at the water's edge.



A **swan** sits on its huge nest in the reeds with its cygnets.

Mallard ducks

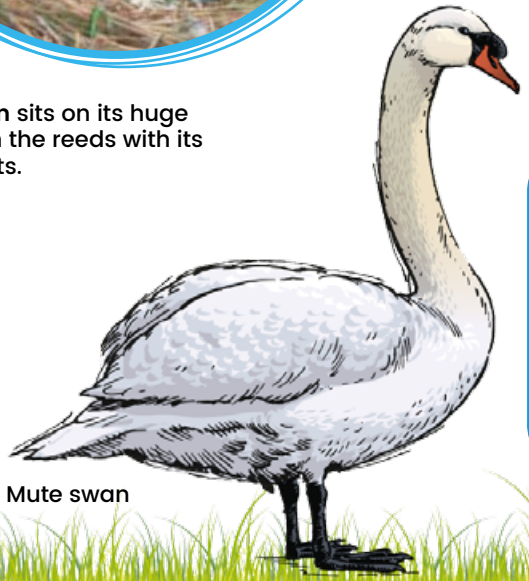
Mallard ducks are very common birds on canals and rivers. They like to build their nests in low branches hanging over the water.

A female **mallard duck** sitting close to her brood of ducklings at the water's edge.

Coots and moorhens

Coots and moorhens are both black but it's easy to tell them apart. Coots have a white patch on their head and moorhens have a red beak. Coots are a bit bigger than moorhens and are more aggressive. Moorhens are harder to spot as they like to hide in plants growing at the water's edge.

A **moorhen** steps carefully over grass with its long yellow legs



Mute swan

Fascinating Facts

By tradition the queen owns all mute swans living in the wild.
Every year there is a ceremony on the River Thames called swan upping when the birds are counted.

Activity: Who am I?

Coot

Living on the edge

The land at the edge of a canal or river is called the bank. Even in towns and cities the banks can provide a good habitat for many types of plant and animal.

People or wildlife

People who look after the canals need to think about the needs of boats and the needs of wildlife. Boats need to have a bank clear of plants so that they can moor. Water animals need plants at the water's edge to provide shelter and food. In some places the reeds at the edge are protected to provide habitats. In some places the reeds are cut back to provide places for boats. This means there are some difficult decisions to keep everybody happy.

Reeds provide cover for all kinds of wildlife in winter.

Some canals have a brick or metal wall at the edge to make the bank stronger. This is good for keeping the water in, but hard for animals and birds to get out of the water.

This coot has made its nest out of sticks at the water's edge where it is shallow.

Who lives here?

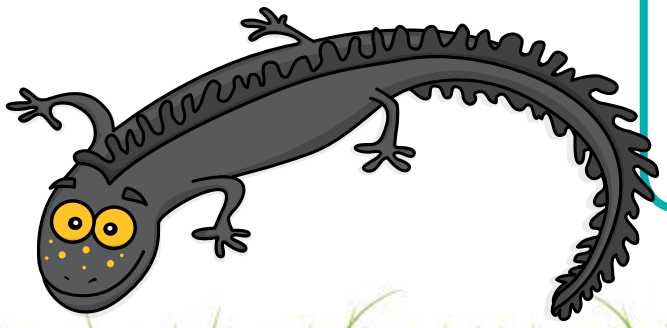
Lots of different creatures live in the plants at the edge of the water. Some creatures are quite rare. Water birds, dragonflies and damselflies are quite easy to spot. But you have to be lucky to see a slow worm, grass snake or water vole.

Endangered species

We have to take special care of some habitats because they are a place where a rare kind of plant or animal lives. Some habitats are protected by law.

Water voles are now quite rare as their habitat has been destroyed in the past. Now they are becoming more common as new habitats are being created. They like to burrow into the bank where they build a nest for their young. They like to swim through the water between the plants at the edge.

Ecologists carrying out an inspection of reeds on the Droitwich Barge Canal to see where voles are living.



Did you know that water can wear things away?
As boats go past, they make small waves that wash the banks away. 200 years ago, the canal builders knew that planting reeds against the banks would help to stop this from happening. By doing this they accidentally helped to make new habitats.

Fascinating Facts

Towpath verges

Plants in the verges

Towpaths were built next to canals for horses to walk along pulling boats. The verges are the places where plants grow either side of the towpath. The plants provide food – seeds for birds and nectar for insects. In turn the insects provide food for birds. Plants are an important part of any foodchain.

A great variety of meadow plants can grow in the verges at the side of the towpath.

Towpaths were built for horses to walk along.

Right plant, right place

Close to the water the soil is damp. This is suitable for plants like meadowsweet and skullcap. Nearer to the hedge the soil is dry. This is suitable for plants such as red campion, oxeye daisy or cow parsley.
In the summer when the plants are flowering they will be buzzing with insects feeding on the nectar.

Special plants

Sometimes rare plants like orchids grow where the conditions are just right even if this is in the middle of a town. We need to be careful not to change the conditions or the plants will die.

This northern marsh orchid grows in swampy conditions.

Animals in the verges

Lots of small invertebrates like bumble bees, woodlice and snails live in the verges. Larger animals like woodmice and voles eat the seeds and plants in the verges.

Long or short grass

We can improve the habitat for some creatures by leaving the grass to grow long by the edge of the water. Long grass provides more shelter and there will be more flowers which provide nectar for bees and seeds for birds. If the grass is cut less often then there is less disruption to minibeasts' life cycles and more hibernation sites in winter.

The longer grass at the edge of the canal allows oxeye daisies to flower.

Red campion is a plant that has long stalks and needs to grow quite tall to flower.

Habitat challenge: Minibeast hunt

Activity: Classification – sorting minibeasts

Hedgerows

An important habitat

Canal hedgerows were first planted when canals were built over 200 years ago. They are an old habitat made up of many different native plants. A good mix of plants in a hedge provides food and shelter for many different animals.

Food for all

Hawthorn is a common hedgerow plant. It has lots of thorns so it was planted to stop cows and sheep escaping on to the canal. It has berries in autumn which are eaten by birds.

Blackberry bushes grow very quickly. The flowers in spring provide nectar for bees. Caterpillars eat the leaves in summer. In autumn the blackberries are loved by birds, mice and humans!

Blackberry has white blossom in spring and lots of black fruits in autumn.

Hawthorn has white or pink blossom in spring and red berries in autumn.

Habitat challenge:
What makes a hedge?

Hawthorn is sometimes called May blossom. Guess which month it flowers!

Fascinating Facts

Looking after hedges

The canal builders planted hundreds of miles of hedgerow to keep cows and sheep away from the canal. Today the hedgerows have to be looked after so that they carry on growing strongly.

Traditions are good

Sometimes you might see a hedge that looks as if it has been chopped down and the branches laid down on their sides. This is a way of encouraging the hedge to grow up from the ground and stopping it getting too tall. It makes it thicker creating a strong barrier against farm animals. It is called hedge laying.

These volunteers are helping to lay a hedge so that it grows more thickly and encourages wildlife.

Habitat challenge:
What's living in the hedge?

Fascinating Facts

Hedges cannot be layed when birds are nesting in spring and summer. Traditionally it is done when there is an 'r' in the month. Which months are good for laying a hedge?

Habitats made by people

Canals are a landscape made by people. Sometimes the canal engineers had to build canals under or over a big hill or across a valley. By building different canal structures they created many new habitats.

Urban cutting
The canal here goes right underneath modern roads. The result is a wooded pathway through the city. Foxes, mice, birds and fish all use it as a way through the city.

Tunnel
The canal here at Sapperton on the Cotswold Canal goes deep into a cutting and ends up in a tunnel under the hill. Bats, spiders and other minibeasts like living in this cold, dark place.

Aqueduct
The Pontcysyllte Aqueduct crosses from one hillside to another across the River Dee. Just like boats, fish and minibeasts can cross from one side of the valley to the other by canal.

Rural cutting
A cutting is where the canal cuts through the ground. The banks at Woodseaves Cutting on the Shropshire Union Canal are covered in trees and shrubs, making good nesting places for woodland birds.

Cuttings and embankments

Secret habitats

Embankments are quickly covered by wild plants and trees as the seeds can spread easily. They remain undisturbed for many years so are rich in biodiversity. In some places the embankments are covered with thick woodlands. In other places there is grassland or meadow.

Birds of prey

Embankments are often good places to see birds of prey. They eat small animals like voles, mice and rabbits that live on the embankment. You can often see barn owls flying along waterside embankments at dusk hunting for mice.

Badgers

Badgers live underground in burrows called setts. The ground close to tree roots in canal embankments provides an ideal habitat for them to dig their tunnels. They eat mainly earthworms, insects and grubs and sometimes small animals.

Waterside embankments are often good places to see barn owls hunting back and forth at dusk, looking for mice to eat.

In some places spring flowers like cowslips grow on embankments.

Badger.

Fascinating Facts

Badgers living on an embankment today could be the great, great, great grandchildren of badgers who first lived there when the canal was built.