



Year 2 – Foodchains

The new science curriculum requires teachers to:

- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain
- describe the life processes of reproduction in some plants and animals.

It emphasises the need to look to pupils' local environment to raise and answer questions about local species in the local environment.

This resource is not designed to teach the topic of foodchains – there are plenty of resources already to do this. It aims to add a local dimension to your work, illustrating concepts using examples of species that are particularly important in Brighton & Hove, either because they are endangered or because we have a strong population which we are working hard to maintain and protect. These species are known as BAP (Biodiversity Action Plan) species.

This resource has been adapted from the BHee PowerPoints 'What's so special about the habitats of Brighton & Hove?' and 'What's so special about the species of Brighton & Hove?' These are also available to download from the BHee website and contain more detailed information about the above. Further information on the BAP species can be found on www.citywildlife.org

Food chains

Bats

There are 18 species of bat in the UK, 4 of which can be found in Brighton & Hove (serotine, noctule, common pipistrelle, brown long eared bat.) Bats are one of the most endangered groups of species in the country – there has been a 90% reduction in their numbers in the last 100 years.

Bats eat flying insects – the exact prey will depend on the type of bat.

Pipistrelle bats are the smallest type of UK bat – they weigh about the same as a paperclip. They eat very small insects such as midges. They can eat up to 3000 insects a night.

Serotines are bigger bats – they need bigger prey, so eat mainly beetles and moths.

Bats are usually the top predator in a food chain, however occasionally they may be eaten by cats or birds of prey e.g., owls.

Bats use echolocation to catch flying insects in the dark. They emit high frequency sounds as they fly and listen to the returning echoes to build up a sound map of their surroundings. The bat can tell how far away something is by how long it takes the sounds to return to them.

Some species of bats do not like bright lights but both the serotine and pipistrelle bats tolerate light, and will feed from the flying insects that are attracted to street lights. The flowers along the roadside on Lewes Road provide a good nectar source for night flying insects. Bats are frequently seen feeding in this area at night.

Bats have adapted to our climate by hibernating in the winter when there is insufficient prey around. They will mate in the autumn, but delay having their babies until the late spring when there is enough food around to feed the adult and juvenile bats.

The presentation shows the food chain of a serotine bat.

Can the pupils name the species and predict the food chain?

Honeysuckle is a sweet smelling flower. It has a strong smell at night which attracts night-flying moths who feed on the nectar.

Moths are the main food source of many bats.

Bats are often the top predator in a food chain, but may sometimes be eaten by birds of prey such as the barn owl.

Starlings

Starlings can often be seen in cities, where they use artificial structures for roosting and nesting. In Brighton they can frequently be seen at dusk circling around the piers or the marina (in large swirling flocks called murmurations) where they will roost overnight. Nationally there has been a 87% drop in starling numbers over the last 25 years. Locally there is a healthy starling population.

Starlings are naturally insectivorous, however in the city they have adapted to eating grains, fruit and even food waste. They often feed in gardens, showing aggressive behaviour to scare of the other birds. They have a strong beak that can probe underground for their prey. They can open their beak underground to capture the buried food e.g., earthworms or leatherjackets.

The presentation shows the food chain of a starling.

Can the pupils name the species and predict the food chain?

Leatherjackets are the larval form of the crane fly (daddy-long-legs). They live in the soil feeding on the roots of grass and other small plants – this makes them unpopular with gardeners.

Starlings may be eaten by other larger birds of prey. In urban Brighton, this might be the peregrine falcon. Originally a cliff-dwelling bird, these now live on the top of tall blocks of flats, such as Sussex Heights, using other birds as prey.

A marine food chain

The following species can all be found in and around the rock pools around Brighton. None of the species are particularly rare, but still make up part of the new protected Marine Conservation Zone. This stretches from Brighton Marina to Beachy Head, and is particularly important because of the variety of marine habitats it provides.

Velvet swimming crabs have a very soft velvety touch to their shells. They have red eyes so are sometimes called devil crabs! They have flattened back legs to help them swim faster and escape their predators, such as cuttle fish.

The presentation shows the food chain of a velvet swimming crab.

Can the pupils name the species and predict the food chain?

Velvet swimming crabs use their pincers to eat dog whelks.

Dog whelks are often found in rockpools. They use their sharp 'tongue' to drill through the shells of barnacles or muscles.

Barnacles do not move. They stick to rocks and feed by reaching into the water with a 'beating leg' which they use to catch plankton.

Plankton are the microscopic creatures that live in the sea.

Games to illustrate different aspects of food chains

Play them outdoors for extra space and a more realistic context!

Bat and moth

Aim: to illustrate the predator:prey relationship of bats and moths and the principle of echo-location

- 🌿 Children stand in large circle.
- 🌿 1 child is chosen as a bat, 4 children are moths. They should stand in the centre of the circle. Bats should wear a blindfold
- 🌿 The aim of the game is for the bat to catch the moths
- 🌿 The bats do this by shouting 'bat' – the moths reply by shouting 'moth'. This represents the 'echo' given back when the bats' noises are reflected back by their prey. In the game, the bats should use their hearing to locate the moths and catch them.
- 🌿 Once captured the moth should leave the circle.
- 🌿 Repeat the game varying the number of bats and moths or the size of the circle.

The energy loss game

Aim: to illustrate how energy is lost as it travels along a food chain

- 🌿 Set up a course with 5 stations in a line. Each station should be manned by a pupil.
 1. bucket full of water (to represent the energy in the green plant)
 2. small flowerpots (to represent the primary consumer)
 3. medium flowerpots (to represent the secondary consumer)
 4. large flowerpots (to represent the tertiary consumer)
 5. empty bucket (to represent the final amount of energy)NB paper/plastic cups with holes in the bottom could be used instead of flowerpots
- 🌿 In teams, pupils have to race to transfer energy from one end of the food chain to the other.
- 🌿 The first person collects water from the bucket using the small flowerpot. They transfer this water to the person with the medium flowerpots. The person with the medium flowerpots transfer the water to the person with the large flowerpots. The person with the large flowerpots transfer the water into the empty bucket/measuring cylinder.
- 🌿 The team with the most water is the team with the most efficient food chain. Pupils should be able to compare the loss of water to the loss of energy in a food chain.

Food web game

Aim: to illustrate that food chains are interconnected and the whole web can be affected if one species is removed

- 🌿 Stand in a large circle, facing in. Explain that you are going to make a food web with each participant as a plant or animal in that web. Choose your habitat – e.g., woodland, beach, pond
- 🌿 Choose one person to be the start of the food chain (the sun) and stand in the middle holding the end of a ball of string.
- 🌿 Ask someone to name a plant from your chosen habitat. The sun will pass them the string and they hold on to it so there is a taut line between them and the sun.
- 🌿 Ask for a herbivore that eats that plant – pass the string for them to hold onto
- 🌿 Continue asking for more herbivores that eat the original plant, or for carnivores that eat the herbivore, passing the string each time. The more times you pass the string across (not round) the circle, the better.
- 🌿 Continue until everyone is holding the string and you have created a huge taut web
- 🌿 Pose the question 'what would happen if e.g., the first plant named was destroyed by a herbicide?' Ask the example plant to tug on their piece of string. Ask whoever felt the tug to then tug firmly on the string and sit down (die!). Continue like this until everyone / most people have felt a tug.
- 🌿 Discuss what has happened, why food webs are important and how each species has its own place in the web.



