

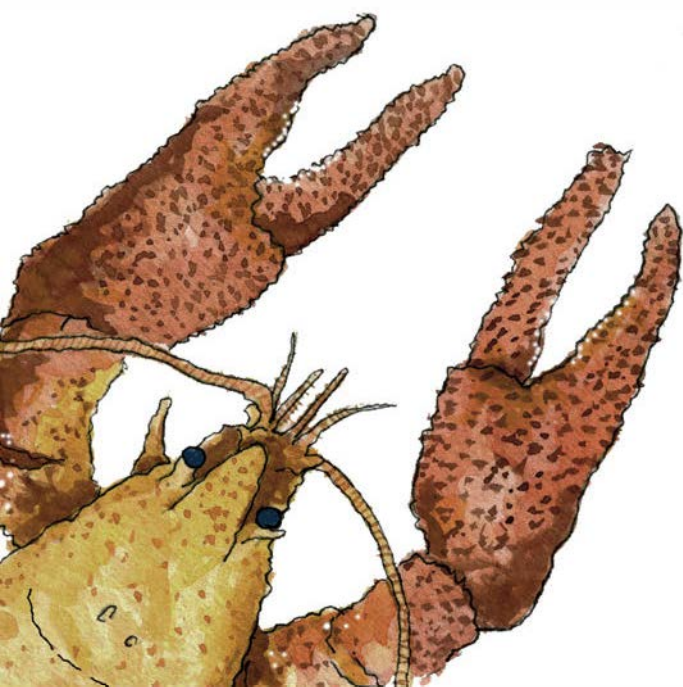
Eden's Amazing Creatures



Fact Files

There's so much to know about the Eden catchment's river life.

These Fact Files will help you begin to discover what makes Eden's Amazing Creatures quite so 'Amazing'!



Illustrations by Tim Stead



I am a: **vertebrate** I am a: **fish**

Eden's
Amazing
Creatures

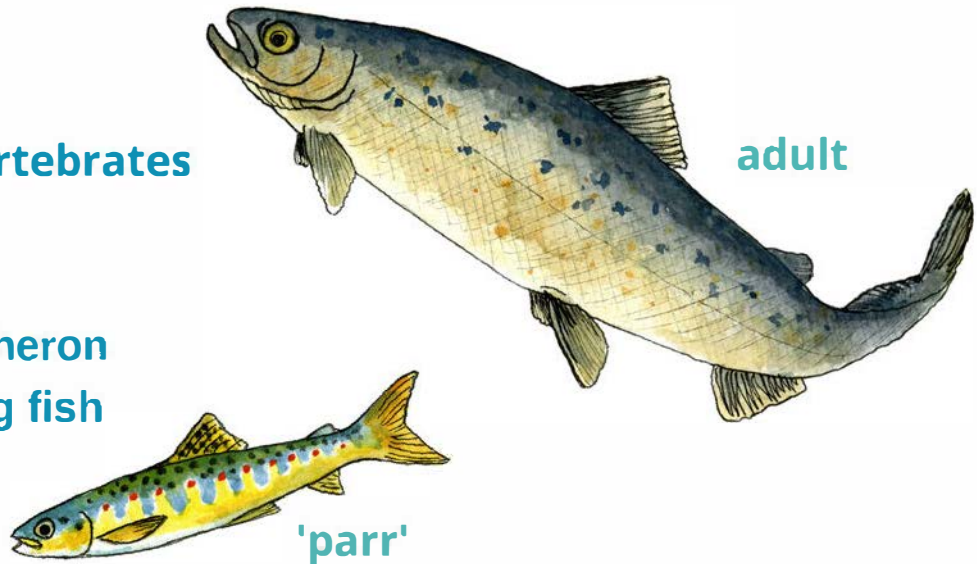
Atlantic salmon

Scientific name: *Salmo salar*

I am a: **carnivore**

I eat: **freshwater invertebrates**
and other fish

I am prey to: **otter and heron**
(and kingfisher and big fish
when I am young)



Fact file

- Atlantic salmon have an unusual **life cycle**. Their markings change so much at each life stage, people used to think the different stages were different species!
Their life stages are: egg - alevin - fry - parr - smolt - adult - breeding adult
- Young salmon live in the river for 3 - 4 years. Then, their bodies change so that they can live in salt water, they swim downstream and migrate thousands of miles across the North Atlantic Ocean, where they grow into adults.
- When the adult salmon are ready to reproduce, (usually 3 to 4 years later), their homing instinct draws them back across the ocean and to the same river where they were born. The 'smells' of the river are imprinted in their brains when they swim out to sea, and this guides them back home. Amazing!
- When they are ready to spawn (lay their eggs), the adults create a 'redd', a shallow nest in the riverbed of a fast-flowing, shallow, clean river or stream.
- The adults cannot feed when they return to the freshwater to breed, and most of them die after breeding. Some, if they have enough energy, return to sea



Wild Atlantic Salmon are in peril. There are a number of reasons why, including: water pollution; changes to rivers; human-made obstacles in rivers such as weirs; over-fishing at sea and salmon farms.

Eden
Rivers Trust



I am a: **vertebrate** I am a: **fish**

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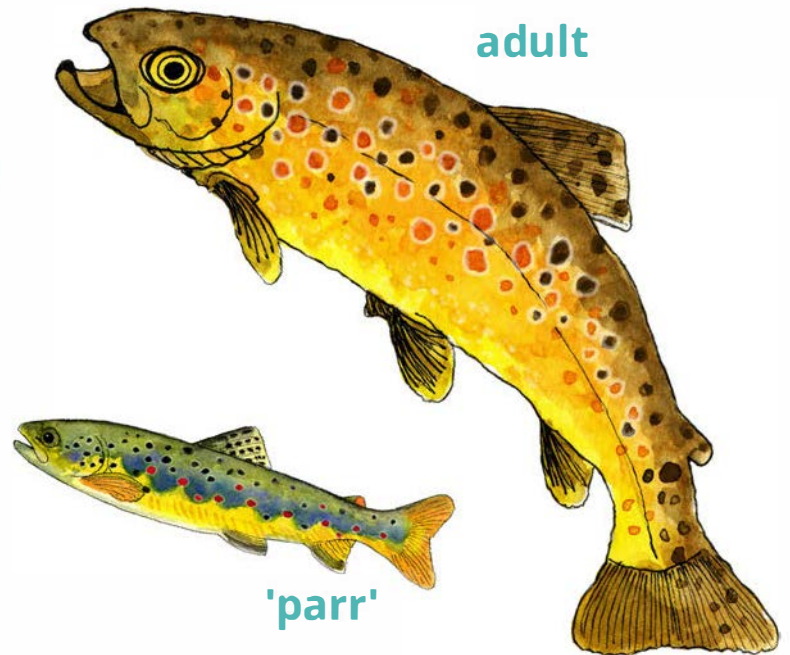
Brown Trout

Scientific name: *Salmo trutta*

I am a: **carnivore**

I eat: **freshwater invertebrates**
and other fish

I am prey to: **otter and heron,**
and kingfisher and big fish
when I am young



Fact file

- Most trout live in rivers and lakes their whole lives, but some trout migrate (travel) out to sea to live for part of their life cycle; even though these are known as Sea Trout, they are still the same species.
- The adult trout spawn (lay eggs) in the same river where they were born. Sea trout use the 'smells' of the river, which became imprinted in their brains when they swam out to sea, to guide them back home. Amazing!
- Brown trout markings vary so much that people use to think there were 50 different species!
- Trout can change colour when frightened, when trying to be frightening or when trying to blend into their surroundings.



Trout numbers have decreased, mainly due to pollution in rivers. Soil washing into rivers is also a big problem when they come to lay their eggs.

I am a: **vertebrate** I am a: **fish**

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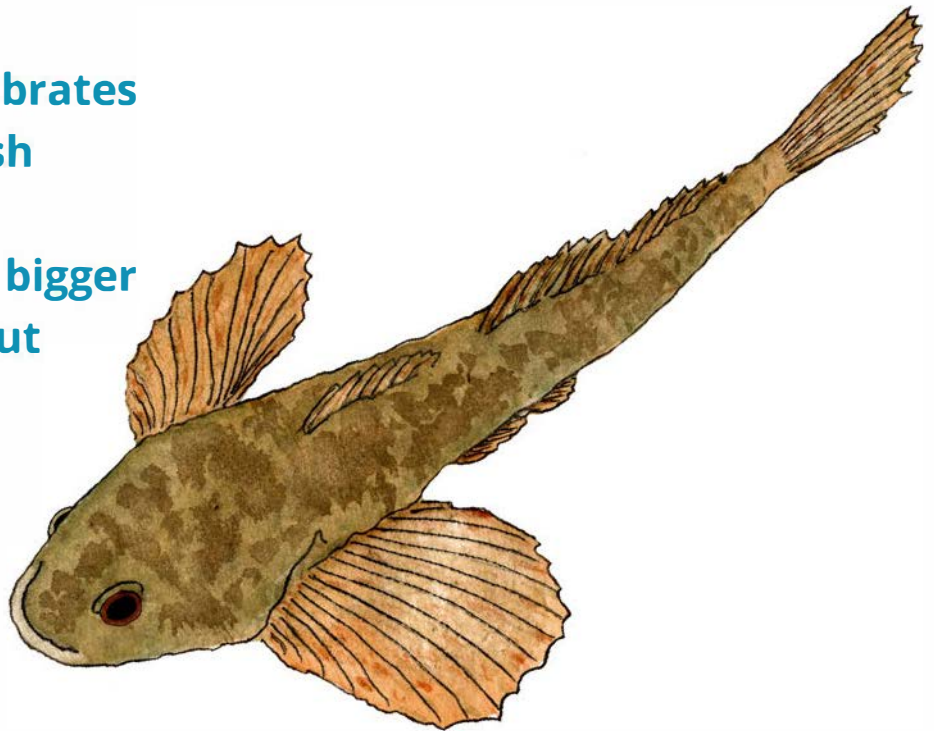
Bullhead

Scientific name: *Cottus gobio*

I am a: **carnivore**

I eat: **freshwater invertebrates**
and the eggs of other fish

I am prey to: **herons and bigger**
fish like salmon and trout



Fact file

- Bullhead are a small fish, with a very large head and very large fins.
- They live at the bottom of fast flowing, stony rivers and streams. Unlike most fish, they do not have a swim bladder to help them float, as they only ever want to stay in the riverbed!
- Bullhead are 'crepuscular', which means they are mostly active at dawn and dusk, when the light is not too bright.
- Females lay 200-250 yellow eggs (only 2mm big!), but it is the male who protects and looks after them for three weeks until the young fish, known as fry, hatch.



They are very sensitive to water pollution and their numbers have decreased in recent years. The rivers where they live have special protection because of this.

I am a: **vertebrate** I am a: **fish**

Eden's
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Creatures

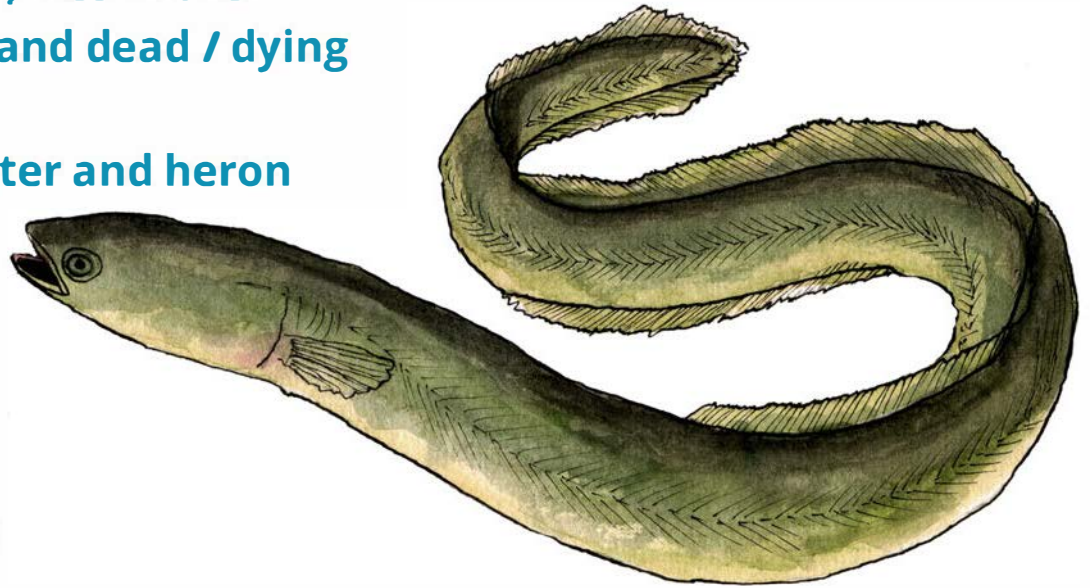
European eel

Scientific name: *Anguilla anguilla*

I am a: **carnivore**

I eat: **small fish, freshwater invertebrates and dead / dying animals**

I am prey to: **otter and heron**



Fact file

European eels have a curious and **amazing life cycle**, much of which is still a mystery, but what scientists have discovered is that:

- Eels lay their **eggs** about 4,000 miles away in the deep blue Sargasso Sea, near Bermuda. They hatch into tiny leaf-like **larvae** which drift, for about 3 years, across the Atlantic Ocean (in the Gulf Stream) towards Europe.
- When they reach UK rivers they have developed into small, transparent '**glass eels**'. After joining the freshwater and starting to migrate upstream, they turn a dark green/brown colour, for camouflage, and become **elvers**.
- They grow and mature into '**yellow eels**', reaching up to 1 metre long, and living in our rivers and lakes for between 10 to 20 years. When they are ready to reproduce, they transform again into '**silver eels**', and migrate back across the Atlantic Ocean to the Sargasso Sea - where they spawn and die.

European eel numbers have decreased by around 90% in just 20 years! This is due to a number of reasons, including: over-fishing, water pollution, human-made barriers in the rivers (such as weirs) which can prevent them migrating.



Lamprey

Scientific name: *Petromyzon* & *Lampetra* species

I am a: **carnivore and parasite**

I eat: **freshwater invertebrates**
and suck the blood of big fish

I am prey to: **otter and heron**



mouthparts

Fact file

Three species of Lamprey live in the River Eden catchment:

- Brook Lamprey (up to 20cm long)
- River Lamprey (up to 40 cm)
- Sea Lamprey (up to 1.2m)



- Lamprey are an **ancient type of fish** that have been around for over 500 million years —that's since **before the dinosaurs!**
- They have skeletons made of cartilage, not bones—that's the same stuff as our ears and nose tips are made of!
- All lamprey spend the first 5-6 years of their lives living in a sandy/silty area of a riverbed.
- **River and Sea lamprey** migrate out to sea for part of their lives. They feed parasitically on other fish, attaching themselves with their strange, toothed, sucker-like mouths. Sometimes they cling onto a fish just to get a lift—especially when migrating upstream to breed!
- **Brook lamprey** only develop eyes and a mouth when it becomes an adult. Then, it stops feeding and only uses its sucker-like mouth to pick up and move sand and gravel to make a nest in the riverbed. Amazing!



Lamprey are now rare and protected by law. The main threats are human-made barriers in rivers such as weirs (lamprey are not strong swimmers and struggle to get up them); habitat destruction and pollution.

I am a: **vertebrate** I am a: **fish**

Minnow

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Creatures

Scientific name: *Phoxinus phoxinus*

I am a: **carnivore**

I eat: **freshwater invertebrates**

I am prey to: **kingfisher, heron**
salmon and trout



Fact file

- Minnows are quite a common small fish that lives in streams, rivers and lakes.
- Females always have silver bellies, but the males' bellies turn pinky-red in late spring and summer, during the breeding season.
- They may spawn several times between April and June, in shallow, gravelly river beds. The males fiercely guard the eggs in the riverbed, protecting them from predators.
- From a very young age, they gather in large shoals - gaining safety in numbers in the deeper pools and in the shelter of plants and tree roots.



They are very sensitive to water pollution and their numbers have decreased in recent years.

I am a: **vertebrate** I am a: **fish**

Stone loach

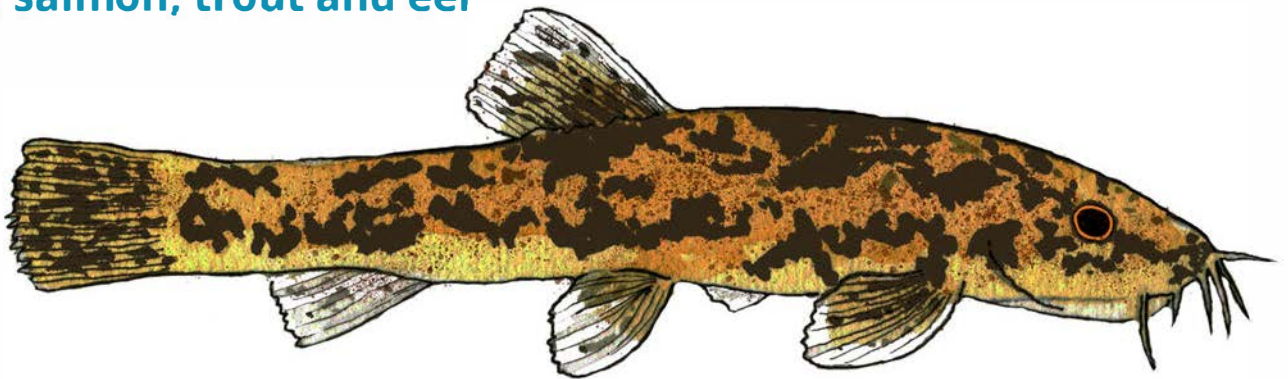
Scientific name: *Barbatula barbatula*

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I am a: **carnivore**

I eat: **freshwater invertebrates**

I am prey to: **bigger fish**
e.g. salmon, trout and eel



Fact file

- Stone loaches live at the bottom of fast flowing streams and rivers, partly burying themselves in the gravel and stones, where they are very well camouflaged.
- Being nocturnal, they are mostly active at night. They use their big whisker-like 'barbels' (which have their taste-buds inside) to help them find their prey in the dark.
- They feed on creatures that also live in the riverbed.
- Their eyes are positioned high on their heads, so that they can look out for danger in the water above them.



Stone loaches can only tolerate a small amount of pollution from farming, they are very sensitive to other types of pollution.

I am a: **vertebrate** I am a: **bird**

Dipper

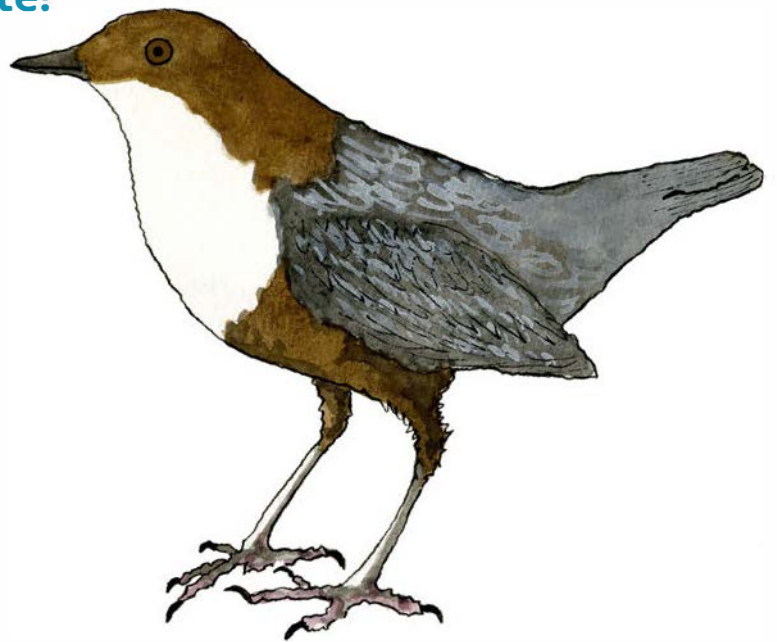
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Scientific name: *Cinclus cinclus*

I am a: **carnivore**

I eat: **freshwater invertebrates -
caddisfly larvae are my favourite!**

I am **at the top of the river
food chain.**



Fact file

- Dippers live in clear, fast flowing rivers and streams and can often be seen perched on a rock, bobbing up and down, pointing their short tail in the air.
- They catch their prey by running along on the stream or river bed, sometimes using their strong wings to 'fly' through the water!
- They have a beautiful warbling song which can be heard loud and clear above the noise of the rushing water.
- They make a cosy nest in a little crevice or cave beside the water, sometimes using man-made structures such as bridges and walls.



Dipper numbers can be affected by any water pollution that reduces the health, or number of, their prey.

I am a: **vertebrate** I am a: **bird**

Grey heron

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Creatures

Scientific name: *Ardea cinerea*

I am a: **carnivore**

I eat: **Fish. (I sometimes eat small birds, frogs and small mammals!)**

I am **at the top of the river food chain**



Fact file

- Herons are 'stealth predators' and can stand absolutely still for ages looking for and patiently waiting for their prey to move beneath them.
- The UK's tallest bird, with long legs, a long neck, plumes of long feathers from its head and a dagger-like bill - it is difficult to mistake a heron for anything else!
- When they fly, herons tuck their neck into their chest and let their long legs trail behind them, and their wings make a curved m-shape.
- They live alone most of the year, but gather together in a group when nesting high up in the tree tops—this is known as a heronry.



Heron numbers can be affected if they eat fish from polluted water.

I am a: **vertebrate** I am a: **bird**

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Grey wagtail

Scientific name: *Motacilla cinerea*

I am a: **carnivore**

I eat: **adult caddisflies, mayflies and stoneflies (and other invertebrates) by the waters edge**

I am **at the top of the river food chain.**



Fact file

- Grey wagtails live near fast flowing rivers and streams, flying out over the water in pursuit of their insect prey. They sometimes also forage in the shallow water at the edge of a pool.
- Grey wagtails are much more colourful than their name suggests, as they have a distinctive yellow belly.
- They live up to the other half of their name 'wagtail', constantly twitching and wagging their long tails up and down as they walk along the water's edge or perch on a boulder watching for insects.
- Their nests are usually built near the water in a crevice of a wall or tree.



Their numbers are affected by the amount of available prey.

I am a: **vertebrate** I am a: **bird**

Kingfisher

Scientific name: *Alcedo atthis*

I am a: **carnivore**

I eat: **small fish - minnow, salmon fry and trout fry are a favourite!**

I am **at the top of the river food chain**



Eden's
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Creatures

Fact file

- Kingfishers are small, bright blue and orange birds that are often only seen as a flash of colour, flying fast and low over the water.
- They hunt their prey by perching on tree branches that overhang slow-moving sections of rivers, lakes and ponds. They dive into the water with their eyes closed and beak open - ready to catch whatever they have spotted from above.
- Kingfishers must eat at least their own weight in food each day to survive!
- They nest deep inside a burrow in a sandy riverbank which they dig with their beaks.



Their numbers have been affected by river pollution, and damage to riverbanks, which makes it difficult for them to find a place to nest. High river levels can also flood or wash away their nests.

I am a: **vertebrate** I am a: **mammal**

Otter

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Creatures

Scientific name: *Lutra lutra*

I am a: **carnivore**

I eat: **fish (eel, salmon & trout),
crayfish, frogs and small birds.**

I am at the top of the
food chain.



Fact file

- Otters are 'semi-aquatic' mammals—they live on land and in the water.
- They are very well adapted to being in water. Their webbed feet, streamlined bodies and thick rudder-like tails help them to swim fast; Their thick fur keeps them warm when wet; and they can even close their ears and nostrils under water!
- Otters have their cubs in dens known as holts, these can be in tree roots, a hole in a riverbank or under a pile of stones.
- They need clean, healthy rivers with plenty of prey; and natural riverbanks, with plenty of trees and plants in which to hide their secluded holts.
- Shy creatures, otters are usually nocturnal (active at night), so you'll be lucky to see one.



Otter numbers in the UK became really low because of human actions, including changes to river banks and pollution from farming. Over recent years, thanks to laws protecting them and improvements to rivers, their numbers are slowly increasing.

I am a: **vertebrate** I am a: **mammal**

Water vole

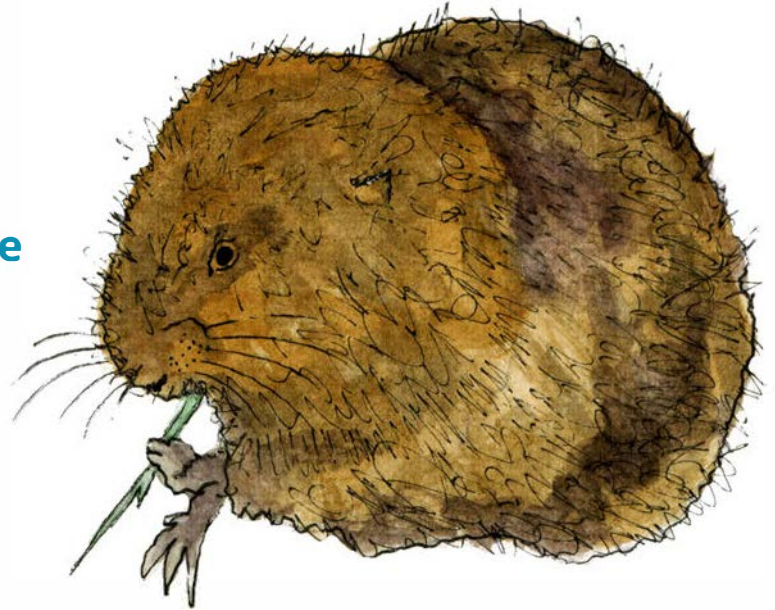
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Creatures**

Scientific name: *Arvicola amphibius*

I am a: **herbivore**

I eat: **grass and plant stems
growing on the riverbank**

I am prey to: **American mink are
my main predator now, but it
used to be heron and otter.**



Fact file

- Water voles are herbivores, eating grass and plant stems. They like to sit and eat in the same place, sometimes leaving behind piles of nibbled plants.
- They live along rivers and streams, around ponds and lakes, and in other wetland areas. They nest in burrows in the riverbank, often with a nibbled 'lawn' around the entrance.
- They look similar to the brown rat, but they have thick chestnut-brown fur, a blunt rounded nose and small ears that are hidden in the fur. They also have a long, thin furry tail, about half the length of their body.
- Did you know? 'Ratty' in Kenneth Graham's book *Wind in the Willows* is actually a water vole! There's no such thing as a water 'rat'!



Water voles are under serious threat in the UK, because of predation by the non-native American mink and habitat loss. Because of this, there are currently only a small number of water vole populations in the Eden Catchment.

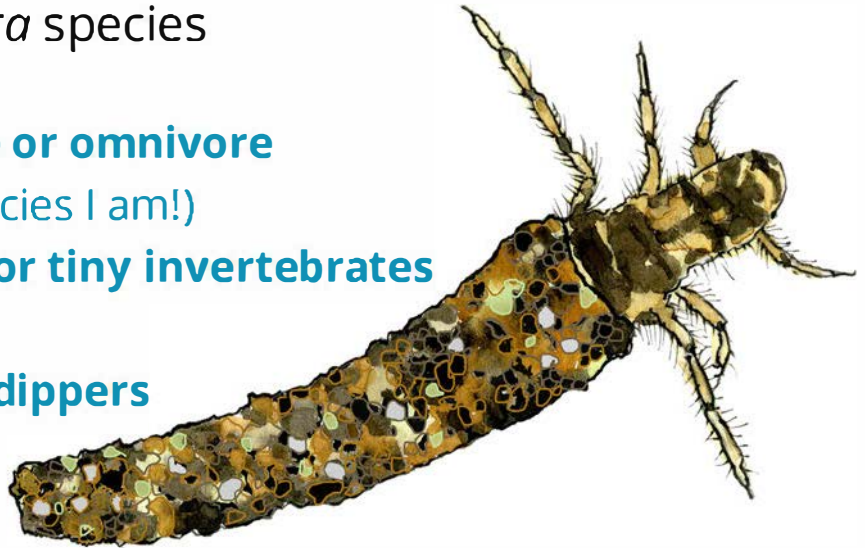
Cased caddisfly larva

Scientific name: *Trichoptera* species

I am a: **herbivore, carnivore or omnivore**
(it depends which species I am!)

I eat: **algae & water plants or tiny invertebrates**

I am prey to: **small fish and dippers**



Fact file

- There are around 200 different species of caddisfly in the UK! They all have an interesting **LIFECYCLE**.
- CASED caddisfly **larvae** live for up to 2 years in water. They make a case to live in, to protect themselves from predators. They use small stones, sand or bits of plants, that they stick together with a silk that they secrete from glands near their mouth. The type of material they use to make their case depends on which species they are and where they live!
- When they are ready to **pupate** they close up the open end of the case to protect themselves. When they are ready to **emerge as adults**, they bite their way out of the case and float to the surface of the water before flying in the air!
- The **adult caddisflies** are moth-like with hairy wings. They are nocturnal and mainly live near water. They may only live a few weeks as adults, as their purpose is to mate and **lay eggs** for the next generation.



adult



They are very sensitive to water pollution and need clean, healthy rivers to survive.

Caseless caddis fly larva

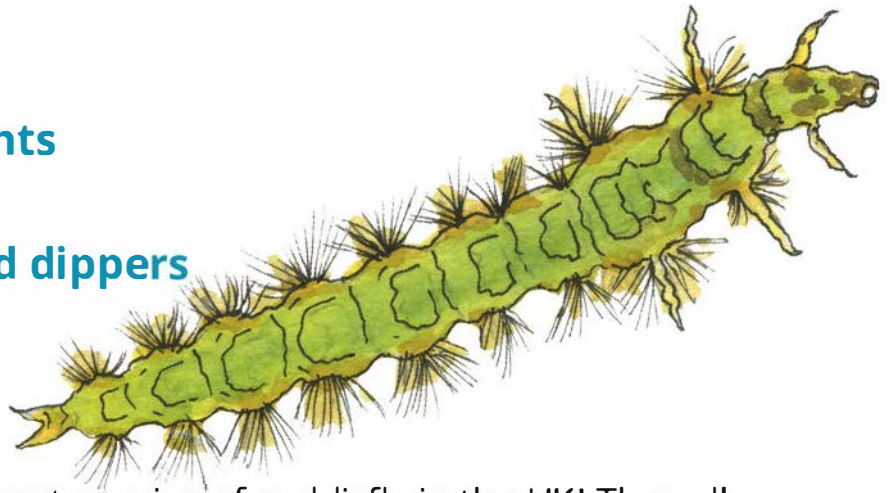
Scientific name: *Trichoptera* species

I am a: **herbivore**

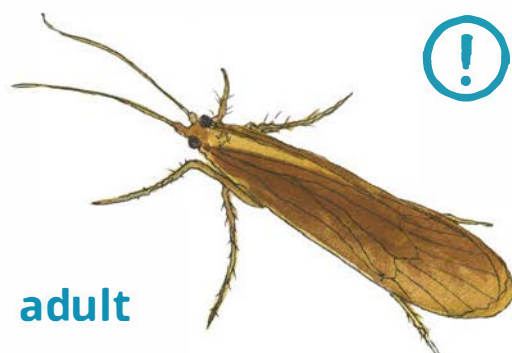
I eat: **algae and water plants**

I am prey to: **small fish and dippers**

Fact file



- There are around 200 different species of caddisfly in the UK! They all have an interesting **LIFECYCLE**.
- The **CASELESS caddisfly larvae** live for up to 2 years in water.
- When they are ready to **pupate** they make a case to protect themselves from predators. They use small stones, sand or bits of plants, that they stick together with a silk that they secrete from glands near their mouth. The type of material they use to make their case depends on which species they are and where they live! When they are ready to **emerge as adults**, they bite their way out of the case and float to the surface of the water before flying in the air!
- The **adult caddisflies** are moth-like with hairy wings. They are nocturnal and mainly live near water. They may only live a few weeks as adults, as their purpose is to mate and **lay eggs** for the next generation.



adult



They need very clean, unpolluted water to survive.

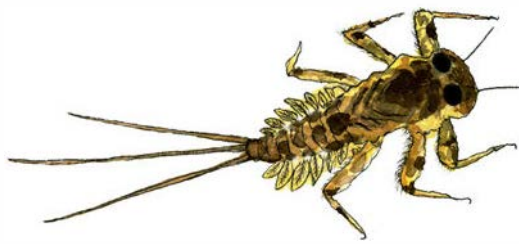
Mayfly nymph

Scientific name: *Ephemeroptera* species

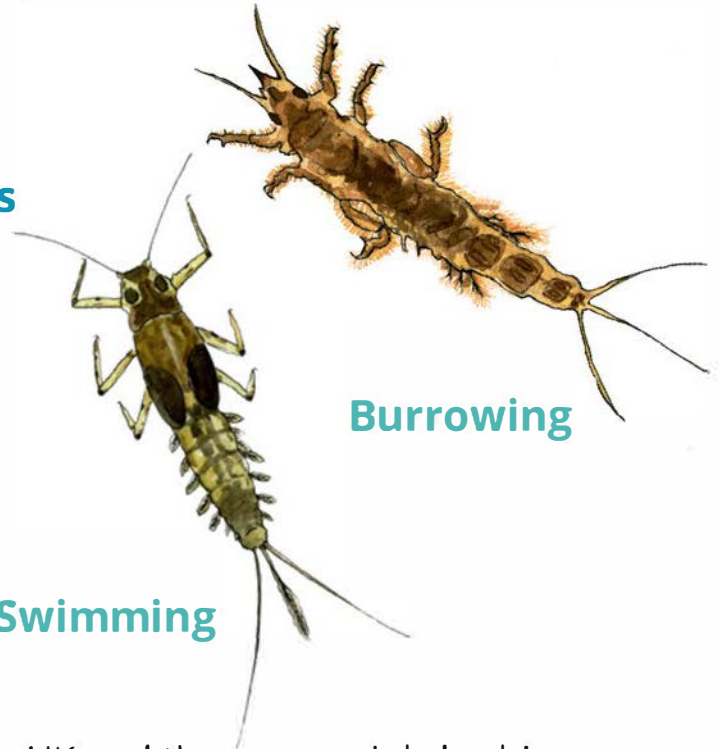
I am a: **herbivore**

I eat: **algae and water plants**

I am prey to: **small fish and dippers**



Flattened



Swimming

Burrowing

Fact file

- There are 51 species of mayflies in the UK and they are mainly herbivores.
- During their **LIFECYCLE**, the young (**nymphs**) live in freshwater ponds, lakes, rivers and streams for up to 2 years. They have gills along the side of their bodies to help them breathe.
- Different species of mayflies have different body shapes when they are nymphs, adapted to where they live in the water. The 3 main groups are:

Swimming mayfly nymphs are strong swimmers, with a streamlined shape to help them swim in fast flowing water.

Flattened mayfly nymphs are really flat! They live in fast flowing water and have strong claws to cling onto smooth rocks and cobbles.

Burrowing mayfly nymphs live in slow flowing areas of streams and rivers. They use their short strong legs to dig a little burrow in the sand and silt.

- As the nymphs grow they moult (shed their skin) many times, before crawling or swimming to the surface and emerging as an adult.
- **Adults** swarm in their hundreds over the water. Some species live as adults just for one day, as they don't have mouths they can't eat and their adult body is only to reproduce!

adult



They need **VERY** clean, unpolluted water to survive.

I am an: **invertebrate** I am an: **insect**

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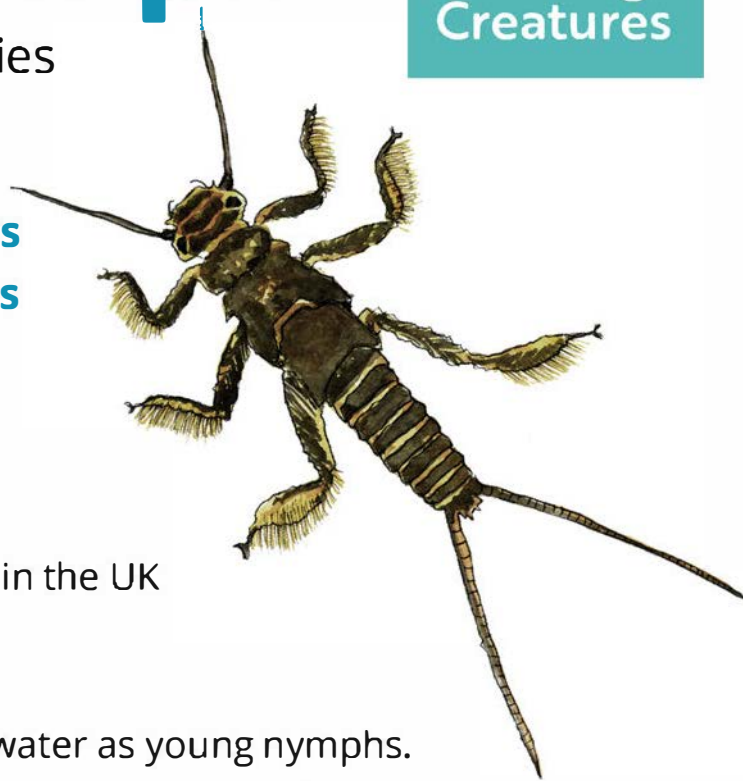
Stonefly nymph

Scientific name: *Plecoptera* species

I am an: **omnivore**

I eat: **tiny invertebrates and plants**

I am prey to: **small fish and dippers**



Fact file

- There are over 30 species of stonefly in the UK and many are hard to tell apart.
- They all hatch from **eggs**, and live in water as young nymphs. Some are herbivores and eat algae, but many are omnivores and also prey on other tiny invertebrates.
- The **nymphs** live in very clean fast-flowing stretches of rivers and streams. They are adapted to this habitat by having strong claws to help them cling onto rocks and not get washed downstream.
- If the river water is low in oxygen, the nymphs do 'push-ups' to help create a flow of water over their body, so that they can absorb more oxygen through their gills—which in some species are located under their 'armpits'!!
- It can take up to 3 years for a nymph to grow and mature into an adult, having shed their hard exoskeleton as many as 30 times!
- When the nymphs are ready to emerge as an **adult**, they climb out of the water onto a rock nearby. The adults then only live for a few weeks, (some species don't even have mouth-parts!) and die soon after breeding.



adult



They are very sensitive to pollution and need clean, unpolluted water to survive.

White-clawed crayfish

Scientific name: *Austropotamobius pallipes*

I am an: **omnivore and detritivore**

I eat: **almost anything that is small, or dead or decomposing!**

I am prey to: **otters, large fish and heron**



Fact file

- White-clawed crayfish are the UK's largest native invertebrate, growing up to 12 cm long and living for up to twelve years! As a crustacean, they are in the same group as shrimp, crabs and lobsters.
- They are nocturnal and are **omnivores**, feeding on a wide range of things, including invertebrates, plants and detritus (dead, decaying stuff!)
- They live in shallow, clean fast-flowing rivers and streams. They hide in underwater tree roots and water plants and within stony riverbeds.
- Crayfish mothers carry their eggs for 9 months until they hatch; the young then hitch a lift on their mother's back for two weeks, mainly for protection!
- White-clawed crayfish need mineral-rich water to strengthen their large exoskeleton, the same way we need calcium to enrich our bones.



White-clawed crayfish are at risk of extinction in the UK, because:

- Signal crayfish (originally from the USA) were brought to the UK. Signal crayfish eat white-clawed crayfish, *and* carry a disease called 'crayfish plague', which is deadly to our native species.
- They are very sensitive to water pollution.
- Their natural riverbank habitat has been damaged.

Freshwater shrimp

Scientific name: *Gammarus pulex*

I am a: **detritivore (decomposer)**

I mostly eat: **'detritus' (dead plants and animals) on and in the riverbed.**

I am prey to: **small fish such as stone loach and bullhead**



Fact file

- Tiny freshwater shrimps live under the stones, rocks, leaves and sticks in slower flowing areas. Related to white-clawed crayfish, crabs, lobsters - they rest, crawl and swim on their sides.
- As they grow, they shed their hard **exoskeleton**, and during this time they are most vulnerable to predation as they cannot move quickly and their bodies are more easily damaged.
- The males are larger than the females, and carry them (sometimes for several weeks) until they are ready to lay their eggs. The females then carry the developing young shrimps inside a brood pouch until they are ready to swim out.
- They have an important role in shredding up and breaking down dead and dying plant and animal material in the river.
- They are more likely to survive in polluted water than the majority of Eden's other river life.