

## Introduction

The Eden Catchment is an excellent example of a large river system that flows over varied, base-rich geology. This, coupled with its large range in altitude, results in the development of distinct habitat types, supporting diverse plant and invertebrate communities.

Due to its high ecological value, and the presence and abundance of certain habitats and species considered to be most in need of conservation at a European level, the river system is designated (and therefore protected) as a Special Area of Conservation (SAC). The listing on the [JNCC website](#) explains further, but here's one paragraph describing the Eden's importance for Atlantic salmon.

"The Eden catchment represents one of the largest populations of Atlantic salmon in northern England. The high ecological value of the river system and the fact that the salmon are able to use most of the catchment (even above Ullswater, a large natural lake on the main river), mean that the Eden is able to maintain a large population of salmon." JNCC website.

The following creatures are the 'priority' species for the Eden Catchment - meaning that they are in danger of disappearance, and for which there is a particular responsibility to protect the Eden, due to the importance of the populations within it.

- [Otter](#)
- [Atlantic salmon](#)
- [Bullhead](#)
- **Lamprey:** 3 species [sea lamprey](#), [river lamprey](#) and [brook lamprey](#)
- [White-clawed crayfish](#)

The links provided take you to the JNCC website, with interesting information on each of species, including why it is afforded special protection.

Following creatures also require special protection:

- [European eel](#) – now listed as critically endangered by the IUCN!
- [Water vole](#) – endangered in the UK
- [Dipper](#) - UK Amber list for conservation concern
- [Grey Wagtail](#) – UK Amber list for conservation concern

**The river also has 184 recorded plant species, more than any other river in the UK!**

# Using the resources

The resource pack includes:

**Eden's Amazing Creatures - Fact Files:** Containing illustration, scientific names; classification information; diet and food chain facts; life cycle information; fun-facts; 'at risk/ threat due to' information.

**A Key to Eden's Amazing Creatures:** For use with the *Who am I?* cards for identification and classification.

**Who am I? cards:** Illustrations for use with *A Key to Eden's Amazing Creatures*.

**Eden's Amazing Creatures - Fact Cards:** Fold-over sheet, containing illustration, simple classification; diet and food chain facts and 'Super stats.'

There are numerous activity options, here are a few ideas to get you started ...

## Eden's Amazing Creatures - Who am I?

Note: Using the following instructions, small groups each use the 'whole pack' of species, but there are a variety of ways you could adapt this activity to suit your class. For example, with younger, or less able children you could reduce the number of species cards, picking a few key ones that make up simple food chains.

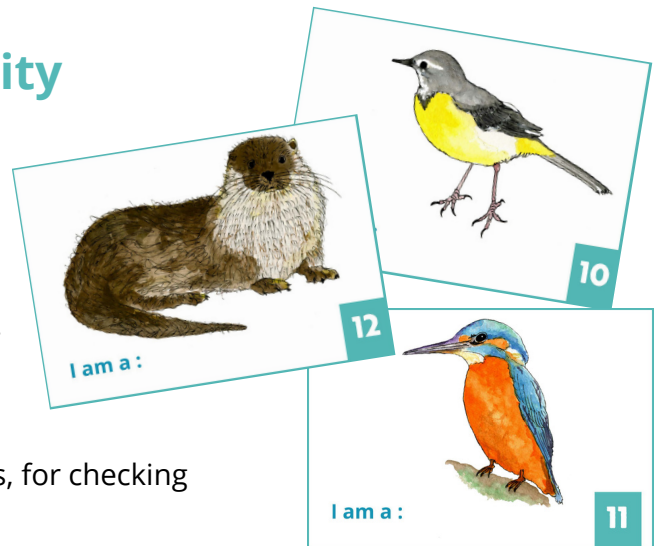


## Preparation

- Print the *A Key to Eden's Amazing Creatures* in A3, colour, enough for one per pair of children.
- Print and cut out the *Who am I?* cards. The activity works well if the class is split into groups of 4-6 children for this activity, so print enough sets for this.
- Put each set in a bag or box, for the children to select a card. If you think you'll do this more than once, it is well worth laminating the cards so that they are more durable.
- Print one set of *Fact Files* per group, so that each child has access to their creature. Familiarise yourself with them using the answer sheet – but don't print that for each group!
- Familiarise yourself with the PowerPoint presentation. Each creature is listed in alphabetical order within its group (i.e. fish, bird, mammal, invertebrate). The name appears on the second click. For those with interesting life-cycles there is an additional slide showing this.

## How to run the Who am I? activity

1. Organise the class into groups of 4-6 children, at tables facing each other.
2. Hand out enough *Keys*, so each child can share one. Give each group a full set of creature cards (in a bag / box so they are not initially visible).  
N.B. Only the adults in class have the answer sheets, for checking answers later.
3. Start the Presentation and, as a whole class use the Key to identify the first two creatures (grey wagtail and stone loach) as examples. Reveal the name of each creature when they have followed the key correctly.
4. Play 'Who am I?' in groups. In turn each child plays by taking a picture card from the bag/box (WITHOUT BEING ABLE TO LOOK at the creature) and holding the picture to their forehead\*, without being able to see what they are. Following the key, they ask their group the questions to find out which creature they have 'become'.  
\* Alternative - the child could wear a cap with a peg to hold the card.
5. It's important that each child **KEEPS** hold of their creature card once identified. Do not put back in the pack, as they will need it later.
6. If you have time, let the groups run the activity more than once so each child could become two creatures. If you have less time, and you would like to ensure that each creature is selected, you can engineer the packs of cards as such and give each group fewer creatures to choose from.



## Using the Fact Files

- Once each child has had at least one turn and become a creature, hand out the Fact Files.
- Give the children time to find out about their creature(s) and then prompt them to share one or two of the facts they thought were most interesting with their group.
- Share some facts amongst the class, as each group will have selected different creatures. As you do this, bring up the picture on the presentation.

I am a: vertebrate I am a: fish


### 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**



**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.

Eden's Amazing Creatures

Eden Rivers Trust

- Select some from each of fish, mammals, birds and invertebrates. It's worth trying to select a salmon or eel, and look at their massive migrations and discuss the importance of healthy rivers and seas for their survival as a species. Another one worth picking out, if you can, is the White-clawed crayfish - one of the most threatened species in UK rivers.



For further inspiration, watch some brilliant short video clips and video fact files about some of the creatures – all either on BBC iPlayer or Jack Perks Wildlife Media (YouTube). Links provided at end of document.

Note: If you're planning a river field trip, especially if you're planning river dipping, we'd always recommend doing the *Who am I?* activity and using accompanying *Fact Files* beforehand. This really helps the children get a feel for the river ecosystem, and importantly, gets them excited about what they may see. Experience shows that, in general, when we see a creature that we already know something about, we pay it more attention and develop a deeper connection with it,

## Eden's Amazing Creatures - Fact Cards

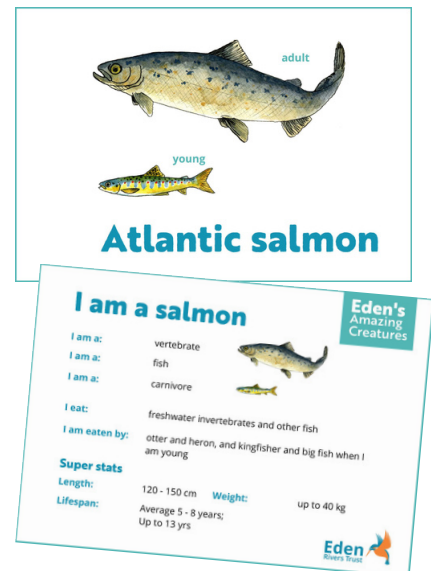
These cards have been designed to 'fold-over' into A5 size, with illustration on one side and facts on the other. Laminate for use outdoors and by the river.

Use them for classification, creating simple food chains, or more complicated food webs. Use the super stats to create a 'top trumps' style game.

They also include the river 'producers' and 'the Sun..' for creating a full food chain or food web.

Can you connect them into a food web? Try using a ball of string. It can be fiddly, but great fun!

Introduce a pollution incident – perhaps untreated sewage spill, or a slurry spill. The fish would be the most noticeable thing to die first, but also the invertebrates would all die too ... then what would happen to the birds and mammals that prey on them?



## River food chains

The basics:

N.B. 'animals' includes mammals, fish, birds and invertebrates.

A **producer** is a plant that makes its own food from sunlight.

speaking it: pro-du-ker

A **herbivore** is an animal that only eats plants.

speaking it: her-bi-vore

An **omnivore** eats plants and animals.

speaking it: om-ni-vore

A **carnivore** only eats animals.

speaking it: car-ni-vore

A **detritivore** eats dead and decaying plants and animals.

speaking it: de-tri-ti-vore

A **parasite** is a living thing that lives in or on another living thing.

speaking it: pa-ra-site

Who eats what, and who eats who, in a river can seem a little more complicated than a simple grass-rabbit-fox food chain, as a predatory species of invertebrate or fish can, when young and small, also fall prey to another fish – or even a fish of its own kind!

For simplicity, we've listed all the birds as top predators of the river food chain, even though some of them could potentially be predated by another predator such as a bird of prey, stoat or a fox. You could discuss this with older children, but we think that complicates things at primary level.

## Eden's Amazing Creatures Fact Cards

– a summary of (roughly) who fits in where!

<b>The producers:</b>	<b>Water plants, algae riverbank plants, riverbank trees (a big plant!)</b>
<b>The detritus:</b>	<b>Dead plants and animals.</b>
<b>The herbivores:</b>	<b>Water vole (on riverbank); Mayfly nymphs (burrowing, swimming, flattened), caddisfly larvae (cased and caseless).</b>
<b>The carnivores:</b>	<b>Some of the invertebrates - stonefly nymphs; some caddisfly larvae; white-clawed crayfish; Fish - Atlantic salmon; brown trout; bullhead; minnows, stone loach; eel; Birds - grey heron; dipper; grey wagtail; kingfisher; Otter.</b>
<b>The detritivores:</b>	<b>white-clawed crayfish; freshwater shrimp.</b>
<b>The parasite:</b>	<b>Sea lamprey.</b>

Some examples to get you started (but there are many more variables to play around with!):

water plant - cased caddisfly larva - brown trout - otter

algae - flattened mayfly nymph - stone loach - heron

water plant - cased caddisfly larvae - dipper

dead plants and animals - white-clawed crayfish - otter

algae - caseless caddisfly larvae - stonefly nymph - minnow - kingfisher

riverbank trees (fallen leaves) - freshwater shrimp - bullhead - eel - heron

algae - swimming mayfly nymph - Atlantic salmon fry - kingfisher

Atlantic salmon adult (doesn't eat on returning to river) - otter

riverbank plants - water vole - American mink

(we haven't got pic of a mink yet!)

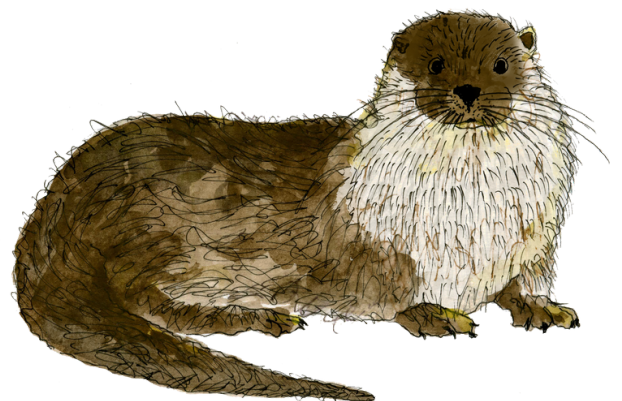
## River ecosystems

The basics:

In a river habitat, like all other types of habitats on Earth, there are many different types of plants and animals that exist together and depend on each other to live. This is called **an ecosystem**.

For example, a river ecosystem may consist of a river habitat, inhabited by: aquatic plants; microorganisms in the riverbed; invertebrates and fish in the water and; a heron on the riverbank.

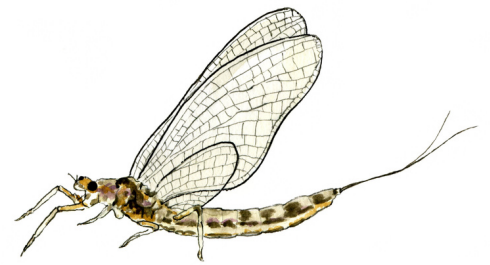
If one part of the river ecosystem is changed, this may affect other living things in it. For example, if pollution suddenly wipes out the invertebrates, it might affect the fish and then the heron, because they would have less food to eat.



## Life cycles

Some of Eden's creatures have really interesting lifecycles.

There are the more 'obvious' invertebrate ones, some of which differ from what you might commonly use (butterfly), as they don't all have a 'pupa' stage.



### Mayflies and stoneflies

have a 'nymph' stage, and develop into adults by undergoing many exoskeleton 'moult' (shedding hard outer skin) as they grow, with their adult bodies gradually developing in the latter moults and emerging with wings and reproductive parts in their final moult.



#### 3-part lifecycle of mayflies and stoneflies: egg - nymph - adult.

The adult is only stage that leaves the water (to find a mate).

We like the [illustrations by the Wild Trout Trust](#).

#### 4-part lifecycle of caddisflies: egg - larvae - pupae - adult.

The creature lives in water for the first three stages, then the adult flies to find a mate.

Then, there are the most interesting and unusual fish life cycles and migrations.

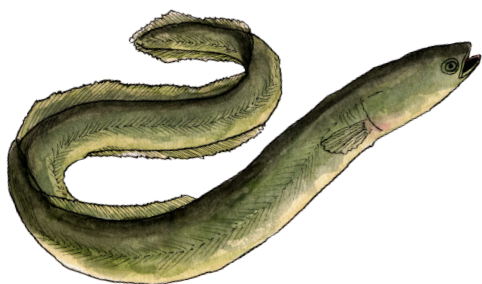
### Atlantic salmon

- A number of different life stages, each with its own name!
- Anadromous : meaning spawned (born) in freshwater but migrates to sea to spend time and mature into an adult before returning to birthplace to breed.
- We like this [illustration of the life stages](#).
- Have a read of our story, [The Adventurous Salmon](#).



### European eels

- Number of different life stages, each with its own name.
- Catadromous: meaning spawned (born) in the ocean, makes a long migration to freshwater to spend most of life and mature, before returning to ocean to breed.
- We like this [illustration of the stages and migration journey](#).
- If you can get hold of a copy of [Think of an Eel](#), this reading of it (with accompanying music) is brilliant!



### Brown Trout

[Life cycle is nicely illustrated](#) and described by the Wild Trout Trust

### Lamprey

Each species have their own unusual life cycle - we're working on information on this!

# Classification

Classification groups organisms together by their features. It is a way of organising them all.

A Swedish man called Carl Linnaeus (1707-1778) was fascinated by the great variety of plants in the world and created a way of organising them, and classified them using their physical characteristics.

Linnaeus gave each species a two-part latin ('scientific') name. His naming system has enabled the world to communicate about all living things in a universal language – a language that is still used today.

The basics:

- Animals can be divided into groups or 'classified' by looking at the similarities and differences between them.
- Animals are divided into two main groups - vertebrates and invertebrates.
- Animals that have a backbone inside their body are called vertebrates.
- Animals that don't have a backbone are called invertebrates.
- Vertebrates and invertebrates are divided into smaller groups.
- Vertebrates are divided into fish, birds, mammals, amphibians and reptiles. Each has its own distinctive features. E.g. a kingfisher might look very different from a heron, but their beaks, wings and feathers mean that they are both classified as birds.
- Invertebrates either have soft bodies, like worms; or they have a hard outer casing covering their body, like insects, spiders and crustaceans.



## Activity idea: Odd one out

Take a look at three carefully selected images (could be three British mammals that they might know e.g. re squirrel; fox; red deer).

Talk about what the children can see and look for the similarities and differences between them; discuss their appearance, what they do and where they might be found.

Ask the children which they think is the odd one out for them – but note that there are no right or wrong answers – they are just different.





### Activity idea: Where do I belong?

Using the *Who am I?* cards as a starting point, ask the children to sort the animals into different groups.

Simple, common misconceptions:

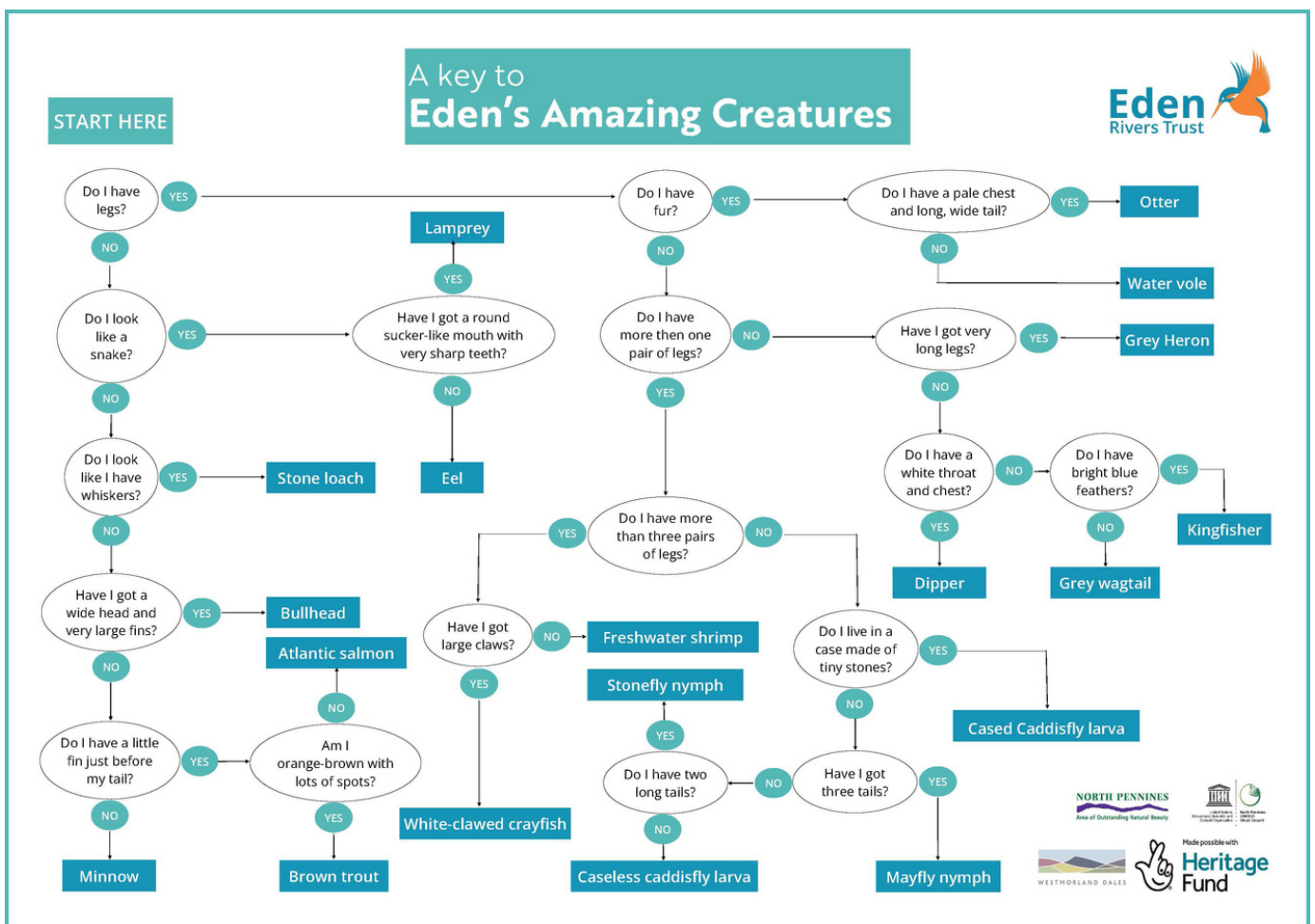
- Animals are furry and have four legs (all living things are 'animals')
- All invertebrates are insects.

A **Classification Key** is a set of questions about the characteristics of living things.

Using *A Key to Eden's Amazing Creatures* and the *Who am I?* activity, identify some of Eden's living creatures and decide which group you think it belongs to. You can find out the answer by looking at the *Fact Files*.

**Follow-up Activity idea:** Make your own classification key for up to 8 of the creatures. Try these four as a start.

### Otter - Atlantic salmon - kingfisher - mayfly nymph



# Eden's Amazing Creatures: list and classification

Species	Group	Scientific name
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## Vertebrates

1. Atlantic salmon	Fish	Salmo salar
2. Brown trout	Fish	Salmo trutta
3. Bullhead	Fish	Cottus gobio
4. European Eel	Fish	Anguilla anguilla
5. Lamprey (3 types - sea, river, brook)	Fish	Petromyzon and Lampetra species
6. Minnow	Fish	Phoxinus phoxinus
7. Stone loach	Fish	Barbatula barbatula
8. Dipper	Bird	Cinclus cinclus
9. Grey heron	Bird	Ardea cinerea
10. Grey wagtail	Bird	Motacilla cinerea
11. Kingfisher	Bird	Alcedo atthis
12. Otter	Mammal	Lutra lutra
13. Water vole	Mammal	Arvicola amphibius

## Invertebrates

14. Cased caddis fly larvae	Insect	Trichoptera species
15. Caseless caddis fly larvae	Insect	Trichoptera species
16. Mayfly nymphs	Insect	Ephemeroptera species
17. Stonefly nymphs	Insect	Plecoptera species
18. Freshwater shrimp	Crustacean	Gammarus species
19. White-clawed crayfish	Crustacean	Austropotamobius pallipes

# Additional resources

## Some inspiring short films

The following short videos have been carefully selected to help inspire children about Eden's Amazing Creatures and help them learn a little about their behaviour.

They are all from either BBC programmes (Springwatch / Autumnwatch / Winterwatch) or Jack Perks' Wildlife Media YouTube Channel. Please note we cannot be responsible for any changes in links. New films may also be added, so you may find more than these!

### Kingfisher

- Level-headed kingfisher - <https://www.bbc.co.uk/programmes/p05w5mm4>
- Kingfisher – don't let it ruffle your feathers <https://www.bbc.co.uk/programmes/p07scc6c>
- Kingfisher <https://www.youtube.com/watch?v=vZCV8Q47TIM&t=2s>
- Kingfisher on litter <https://www.youtube.com/watch?v=iGqnyqBfv1s>

### Dipper & heron

- Dipper dives below the ice - <https://www.bbc.co.uk/programmes/p05w5pck>
- Delightful Dippers - <https://www.bbc.co.uk/programmes/p08fcjst>
- Dipper <https://www.youtube.com/watch?v=ZP-lSyjZIRE>
- Flying dipper <https://www.youtube.com/watch?v=ymjPMERnX5A>
- Grey heron [https://www.youtube.com/watch?v=sVwx1\\_2T15U&t=2s](https://www.youtube.com/watch?v=sVwx1_2T15U&t=2s)

### Otter

- All about Otters <https://www.bbc.co.uk/programmes/p08fqk4r>
- Otter Fact file <https://www.youtube.com/watch?v=AF0i-tAMMWw&t=2s>
- Otter swimming in litter <https://www.youtube.com/watch?v=SXpOGaBY9Cg>

### Water vole

- Water vole fact file <https://www.youtube.com/watch?v=8wRTPw0Yio&t=1s>
- Water vole feeding <https://www.youtube.com/watch?v=y8DlxmrpbWY>
- Water vole feeding <https://www.youtube.com/watch?v=e1EZBX9PT44>

## Atlantic salmon

- Atlantic salmon <https://www.youtube.com/watch?v=DWnCqIPW064>
- Atlantic salmon <https://www.youtube.com/watch?v=paT-cUPcTLO>
- Atlantic Salmon fact file [https://www.youtube.com/watch?v=hN5EkC\\_C4A0](https://www.youtube.com/watch?v=hN5EkC_C4A0)
- Atlantic salmon on redd <https://www.youtube.com/watch?v=ND2SmRA83hc>
- Atlantic Salmon freshwater stages (young) <https://www.youtube.com/watch?v=A2L4poTEXdM>
- Atlantic salmon on spawning grounds <https://www.youtube.com/watch?v=FSk3IXR98-A>
- Spawning behaviour <https://www.youtube.com/watch?v=d1VgYmgOucc>

## Bullhead

- Bullhead <https://www.youtube.com/watch?v=WYuPJeHy-oA&t=31s>
- Bullhead, stone loach, eggs, stickleback, <https://www.bbc.co.uk/programmes/p07bncj9>

## Brown trout

- Brown Trout Fact file <https://www.youtube.com/watch?v=VJL6oPWneTo>
- Sea trout spawning behaviour <https://www.youtube.com/watch?v=gb5lle4Qprg&t=5s>

## European eel

- Glass eels <https://www.youtube.com/watch?v=0scP03A4JMI&t=18s>
- Adult eel looking for food <https://www.youtube.com/watch?v=YjeEGVM25DU>

## Lamprey

- Lamprey Fact File <https://www.youtube.com/watch?v=3ITVjV7rngU>
- River lamprey <https://www.youtube.com/watch?v=YgcSi178n-M>

## Riverflies (caddisfly – stonefly – mayfly)

- Caddisfly Chaos in the Cairngorms (shows dippers and grey wagtails feeding on them) <https://www.bbc.co.uk/programmes/p07c7m5y>
- Stonefly, flattened mayfly, cased caddisfly [https://www.youtube.com/watch?v=vR6\\_g8vM\\_aA](https://www.youtube.com/watch?v=vR6_g8vM_aA)
- Adult mayfly resting by the river <https://www.youtube.com/watch?v=UbzqbQ3ZrnY>

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