

# Wider curriculum. Week 16 - Science

1.

Our new science topic is **Animals, including humans**. Below are the objectives that we would cover at school. This pack will only cover some of the objectives, but you may want to continue your learning over the summer so we thought it would be useful to show you them all. Included at the end of this pack are ideas for extra activities that you could do linked to these objectives.

- \* Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.
- \* Identify that humans and some other animals have skeletons and muscles for support, protection and movement.
  - Recognise that animals can be categorised into groups according to what they eat (carnivore, omnivore and herbivore) and by their type (amphibians, mammals, reptiles, insects, birds) and if they are invertebrates or vertebrates.
    - Look at food chains
  - Learning about what we need to stay healthy and what it means to have a healthy lifestyle, including the role of food, exercise, sleep and mental health.

*The learning and activities in here will take more than one session, probably about 2 or 3 so feel free to spread it out.*

## Useful websites and detail of the attachments with this pack

BBC Bitesize - vertebrates and invertebrates: <https://www.bbc.co.uk/bitesize/articles/z4m6hbk>

BBC Bitesize - classifying animals: <https://www.bbc.co.uk/bitesize/topics/zn22pv4/articles/z3nbcwx>

BBC Bitesize - animals and teeth - <https://www.bbc.co.uk/bitesize/topics/zn22pv4/articles/z846gdm>

BBC - Animal groups - <https://www.bbc.co.uk/bitesize/articles/z4svgwx>

DK findout - A interesting video about animals with questions and answers: <https://www.dkfindout.com/uk/video/animals-and-nature/do-you-know-about-animals-video/>

DK findout is a great website in general to explore—for science and other topics too! <https://www.dkfindout.com/uk/>

**Resources you might want to use for extra learning or support attached (check before printing all off!)**

- **Vertebrates and invertebrates information cards** - you could use for activity 1 but not necessary.
- **Animal group posters** - You could use for Activity 2, but you might want to do your own research.

**Teaching:** In order to study living things better scientists classify (arrange) them into groups according to features that they share. At the top of the classification system is the **kingdom**. Animals make up one of five kingdoms in the natural world. The others are: Plants, Fungi, Bacteria and Protists (algae and other single celled living things).

The **animal kingdom** is a vast group of millions of different kinds (species) of animals. Thousands more species are being discovered each year. Whatever their shape, size, diet or way of life they all have some things in common, Their bodies are made up of many cells and they have nerves and muscles to move and respond quickly to the world around them. All animals need food to get the energy that they need to live.

You could watch this video about animals: <https://www.dkfindout.com/uk/video/animals-and-nature/do-you-know-about-animals-video/>

Animals are then classified in different ways according to their features. You can start by dividing animals into two groups, **invertebrates** and **vertebrates**. You could watch this clip to show you what this means: <https://www.bbc.co.uk/bitesize/articles/z4m6hbk>

**Invertebrates** are animals that have no backbone or skeleton inside them. Some will have a tough outer shell for protection (like a snail) but other may have no hard parts in their body at all! (worm) Invertebrates are the largest groups of animals and they come in all sorts of shapes and sizes. They mostly hatch from eggs.

### Invertebrates

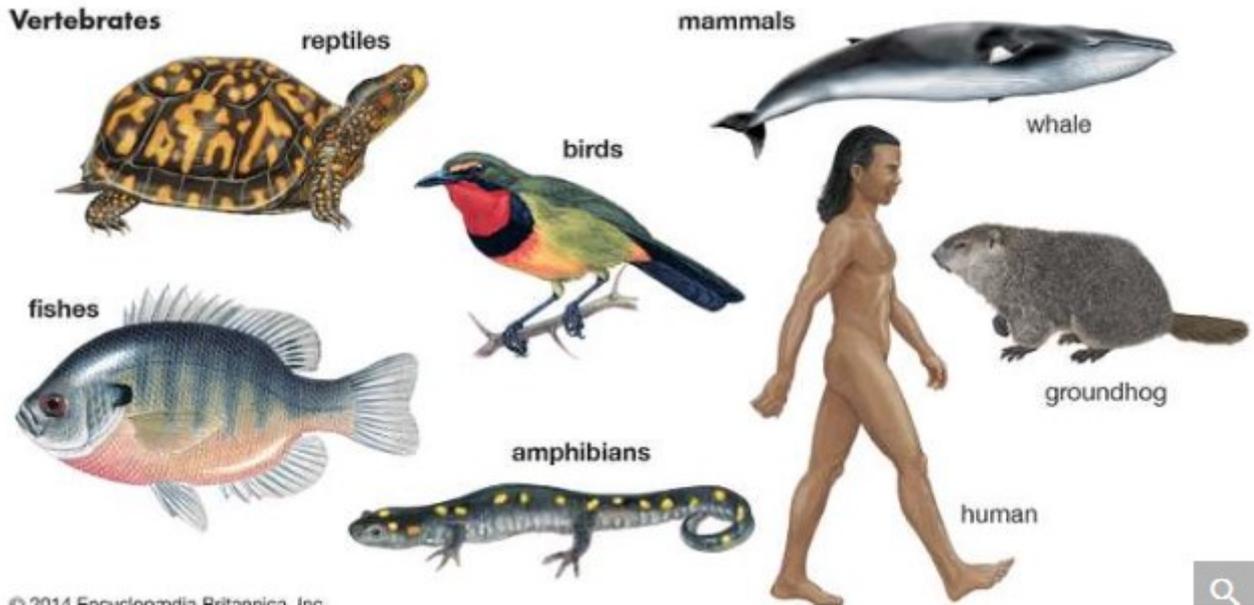


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Watch this video for more information and examples: <https://www.youtube.com/watch?v=rzxFTrktN1c>

**Vertebrates** are animals that have a backbone. The backbone is column of bones that supports the body and also protects the spinal cord. The back is made up of many separate bones, called vertebrae. Most vertebrates have two pairs of limbs. In fish these can take the form of fins, but in others they are legs, arms, flippers or wings. Some vertebrates, such as snakes, have no external limbs. **Vertebrates make up just 3% of all known animal species!**

The world's biggest animal, a blue whale, is a vertebrate.



Watch this video for more information and examples: <https://www.youtube.com/watch?v=qRkoGO7hNXg>

**Activity 1:** Do some more of your own research if you can (or use the information from these sheets) to create a poster about invertebrates and vertebrates. Your poster must explain what each is and give some examples of each.

### Teaching:

So we have learnt that animals can be put into two groups according to whether they are vertebrates or invertebrates. The animal kingdom of vertebrates can then be divided into even smaller categories. The species is the smallest grouping of all that contains just one kind of animal.

Look on the next page to see how a brown bear can be classified



Kingdom: Animals

The first group is Animals. A brown bear is in the animal kingdom.



Phylum: Vertebrates

Now we can see that the brown bear can be sorted into the vertebrates as it does have a backbone.

*Phylum* is another word for the category that comes after kingdom.



Class: Mammals

Brown bears are classed as mammals, along with many other animals. You might know what this word means already. We will be looking at it in more detail later on. We lose the snake because it's not a mammal. Can you see which other animals we have lost too? That's because they aren't mammals.



Order: Carnivores (Meat-eaters)

We can now categorise the brown bear by what it eats. It's a carnivore meaning it just eats meat. Which animals don't fit into this group?



Family: Bears

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We can now categorize the brown bear by the general type of animal it is, (**the animal family**) it's a bear.



Genus: Ursus

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*Genus* and *Ursus* are other family names that only include some bears. The name comes from Latin and includes 4 species of bear, the brown bears, the polar bear and the two species of black bear.



Species: Brown bear

The final category is the **species**. There are many species of bears, but there is one species called the brown bear.

Now let's find out about some of these categories in more detail so that you can have a go at doing a similar sorting activity with an animal of your choosing.

**Teaching:** Lets look at some of these **animal groups or classes** in more detail. Let's start with the **vertebrates**.

6.

## Mammals

Mammals are warm-blooded animals. This means they make heat inside their body. To make this heat they need fuel (food). Most mammals have a coat of hairs to trap warm air near the skin. Other mammals, such as dolphins, spend all their time in water where a furry coat wouldn't work. Instead, their skin has a layer of thick fat to trap heat. All baby mammals drink milk made by their mother (apart from some humans where there are alternatives) to help them grow and develop. This means that baby mammals are really dependent on their parent or parents in the earliest stages of their life.

Small mammals use so much energy keeping warm that some must eat food almost equal to their body weight every day.

Mammals can look very different on the outside, like a giraffe and a whale, but inside they all have a similar basic bony skeleton. The skeleton provides a framework for the mammals body and protects the inner organs. Muscles are attached to the skeleton, which pull on the bones and allow the animals to move.

Watch this video if you like about mammals: <https://www.youtube.com/watch?v=hGonwMTPV6g>

## Reptiles

Reptiles are cold-blooded animals that are characterised by their scales and their ability to lay eggs. They include animals like crocodiles, snakes, lizards and turtles. Reptiles are **tetrapod vertebrates**, meaning that they all have back-bones and that the majority have four legs. Reptiles live on land and in water. Millions of years ago, reptiles called dinosaurs, some of which were the biggest land animals that ever lived, ruled the world.

Reptiles can be found on most continents except Antarctica.

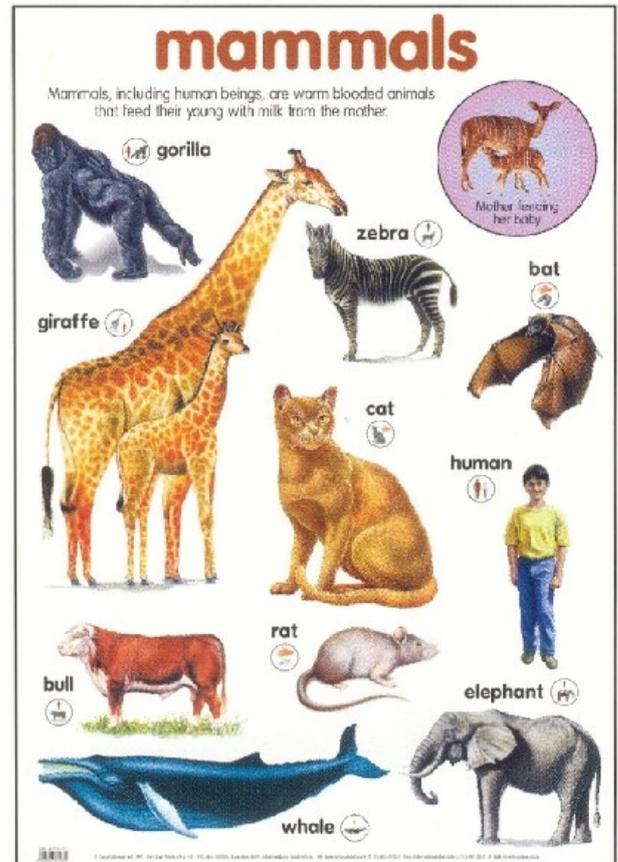
In Britain, common reptiles include Britain's only venomous snake, the adder, as well as grass snakes and common lizards.

Reptiles can be found in a variety of habitats, from compost heaps to woodland areas.

Reptiles do not have fur or feathers to keep warm, or sweat glands and the ability to pant to help them cool down. Because of this, they actively need to seek sunlight or shade to help maintain their body temperature. This makes them **cold-blooded** animals with slow metabolisms.

You could watch these videos if you like: <https://www.bbc.co.uk/bitesize/topics/z6882hv/articles/zp9pfg8>

[https://www.youtube.com/watch?time\\_continue=11&v=-rDjqhFJrFI&feature=emb\\_title](https://www.youtube.com/watch?time_continue=11&v=-rDjqhFJrFI&feature=emb_title)



Let's see some examples of reptiles:

## Types of Reptiles



7.



## Fish

Fish are scaly skinned aquatic vertebrates that swim in water and breathe using gills. Most fish have a skeleton made from bones but sharks and rays have skeletons made of a softer, rubbery substance called cartilage. More than half of all vertebrates on earth are fish! There are a lot of different fish and many of them look very odd indeed. There are blind fish, fish with noses like elephants, fish that shoot down passing bugs with a stream of water and even fish that crawl onto land and hop about! Fish spend all of their lives in the water and are cold-blooded with the exception of Tuna family and the Mackerel shark family. Scientists believe that there are more than 24,000 different species of fish in the world.



Copperband butterfly fish



Angel fish



Sea horse - yes they count as fish!

You could watch this video about fish: <https://www.youtube.com/watch?v=TJN3gJoZqLY>

## Amphibians

Amphibians are best known for their ability to live on both land and in water. The word 'amphibian' comes from the Greek term meaning 'double life'. Amphibians are an ancient group of animals. They first appeared about 340 million years ago and are descended from fish. Today, the animals within the group vary greatly—from the frog with its powerful back legs for jumping to the little known worm-like caecilian, which has no limbs at all. There are more than 7,000 species of amphibians living in the world today.

Have a look at some different examples of amphibians on the next page.

All amphibians begin their life in water with gills and tails. As they grow, they develop lungs and legs for their life on land.



Bull frog tadpole —



- Fire salamander



This is an axolotl, a type of salamander. Axolotls are rare amphibians that live in lakes in central America.

You can watch this video about amphibians: <https://www.youtube.com/watch?v=XI8GPs6TAc>

## Birds

Birds are vertebrates with wings and feathers. Most birds can fly, using powerful muscles to flap their wings. A few bird species do not have strong enough wings to fly, we call them flightless birds. (There are about 40 species of birds that cannot fly) Birds' bodies are covered with a light, tough layer of feathers and they have very light skeletons. Instead of teeth they have horn-like beaks or bills. Birds hatch from eggs and many species build nests where their eggs and young can develop in safety.

Birds are found all over the world. People who study birds are called ornithologists.



[Aquatic warbler](#)



[Barn owl](#)



[Barnacle goose](#)



[Black guillemot](#)



[Blue tit](#)

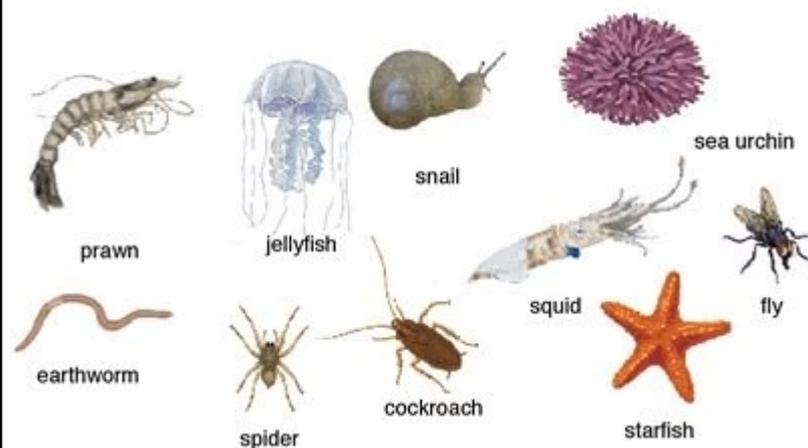
Watch this video about birds if you like: [https://www.youtube.com/watch?v=8vL\\_2rF8JHU](https://www.youtube.com/watch?v=8vL_2rF8JHU)

9.

## Invertebrates, including insects.

As you hopefully remember, invertebrates are animals without a backbone or internal skeleton. They come in a huge range of shapes and sizes. Tiny mites are so small they can only be seen with a microscope. The largest recorded invertebrate ever recorded was a giant squid (13 metres long!). Insects, spiders, worms and jelly fish are all types of invertebrates. Insects are one of the most common types of invertebrate. Their bodies have a hard outer casing, and are divided into three sections: head, thorax and abdomen. Most adult insects have six jointed legs and two pairs of wings. Many species can fly as adults, although they often hatch out from eggs as crawling grubs or larvae.

Scientists estimate that there are 1.4 million billion insects alive on Earth. That's 200 million insects for every living human being!



Here is a video about insects you might want to watch:

<https://www.youtube.com/watch?v=iJfBNyBKQA>

## Activity 2:

You have a choice now. You could do one of these activities or both!

1. Choose an animal and show how it is categorised in different ways, like we saw with the brown bear. Include lots of information about this animal and be clear on what makes it fit into each category.
2. Create an information page/booklet/PowerPoint about one animal from a group of your choosing. I.e. you might choose a cat, which is a mammal. Give a clear explanation as to why it belongs in its particular group and then lots of information about that animal. I.e. where does it live? What does it eat? How long does it live? Interesting facts about it etc. You are going to be doing something similar for your English learning this week so you might want to combine them both or do two separate projects!

## **Extra activities that you might want to do over the summer:**

- Learn about **food chains**. You watch this video as a starting point: <https://www.bbc.co.uk/bitesize/topics/zbnnb9q>. There are a few different videos here to watch. You could create your own picture/model of the food chain for an animal that you are interested in.
- **Staying healthy**—diet and lifestyle. You could watch these videos as a starting point or do your own research. This links in with the PE remote learning. <https://www.bbc.co.uk/bitesize/clips/zw3jxsg>.