

# 3

# Variety of life



**What**

**you will learn**

**What is an animal?**

**Where do we belong?**

**Pick a plant**

**How to organise your organisms**

**Lives in danger**

# What is an Animal?

We all have our own ideas about what an animal is. But when one scientist talks about a particular animal, it is very important that other scientists all over the world know exactly which animal he or she is talking about.

There are hundreds of millions of different kinds of animals in the world. We can sort animals into groups to help us identify them all. We call this **classifying** them. We start off with big groups, and then split those into smaller and smaller ones.

What do you think are the main groups within the animal world?



lions



Reagal Fish



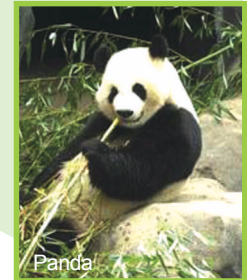
Snake



Zebras



Penguins



Panda

## Who is spineless?

Look at the pictures of animals opposite. You will notice that the animals vary a good deal. There are some that are quite similar.

The mouse and the hamster look alike in shape, both are covered with hair and have four legs. But is the mouse in any way like, say, a goldfish?

No, however, the mouse and the fish do have something in common.

They both have a backbone.

The backbone or spine is a line of bones running inside along the animal's back. Animals with backbones are called **vertebrates**.

Those which do not have backbones are called **invertebrates**.



Hamster



Gold fish



Mouse

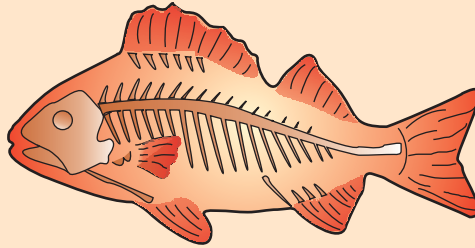
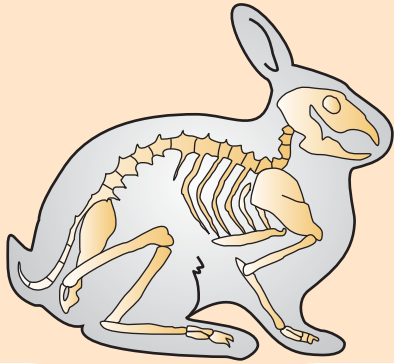
## Do you Know?

There are about 1200 000 different kinds of invertebrates, but only about 47000 different kinds of vertebrates.

## • The Vertebrates

Vertebrates have a hard, bony skeleton inside their bodies. This gives them support, protects the delicate organs inside the body and lets them move about.

Vertebrates all have a backbone made up of lots of little bones.



## • The invertebrates

Invertebrates come in all shapes and sizes. Many of them have soft bodies.

Others have shells inside or outside their bodies, or an outer suit of armour. But invertebrates do not have a bony skeleton with a backbone.



- 1 Fill in the blanks using the following words.

**skeletons snails fish backbones  
soft without beetles rabbits**

Vertebrates are animals which have \_\_\_\_\_  
\_\_\_\_\_.

They have \_\_\_\_\_ inside their bodies.  
Examples of vertebrates are \_\_\_\_\_  
and \_\_\_\_\_.

- 2 Make a list of about 10 different animals. Decide which are vertebrates and which are invertebrates.



### Ideas

→ We **classify** animals and plants by putting them into groups.

→ The animal world is divided into two main groups, **vertebrates** and **invertebrates**.

→ Vertebrates are animals with **backbones**.

→ Invertebrates are animals **without backbones**.

# Where do we belong?

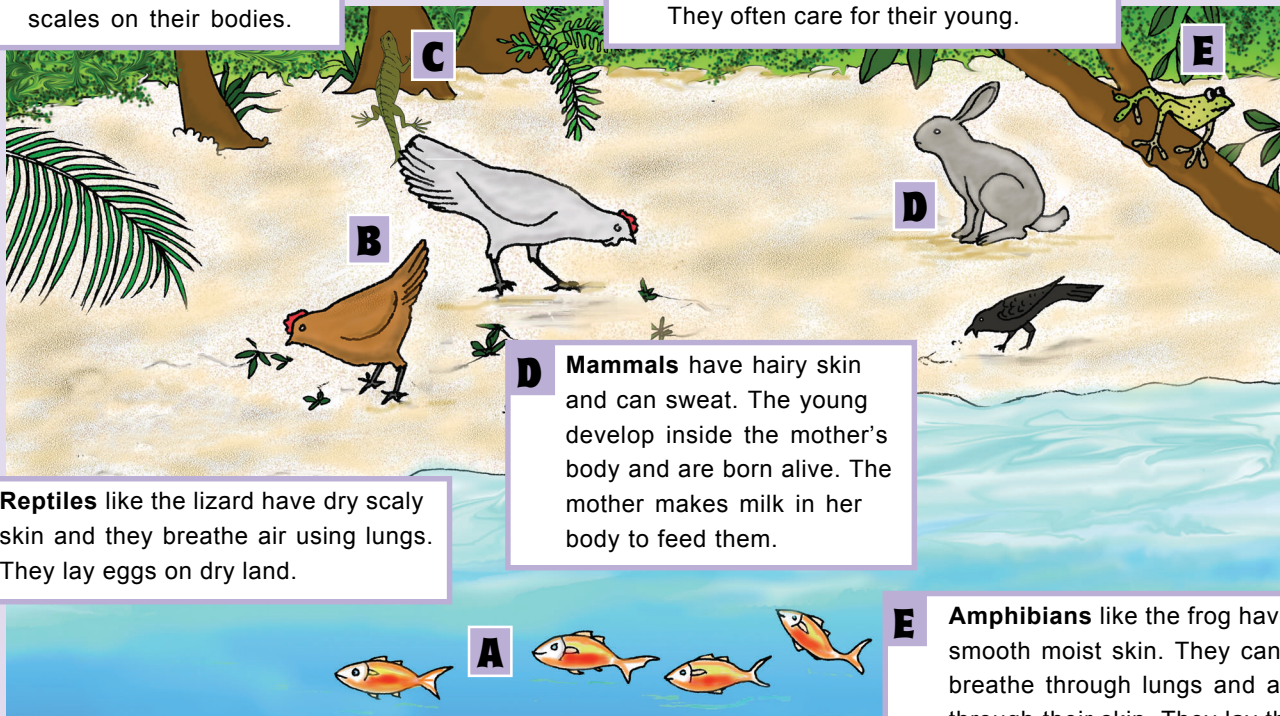
There are more invertebrates than vertebrates. But the vertebrates are much bigger and more noticeable. There are a variety of vertebrates too. To help us identify the animals they are grouped into different families or classes.

## Organising the vertebrates

The vertebrates can be divided into these five groups.

**A** **Fish** live in water. They have gills for breathing, fins for swimming and scales on their bodies.

**B** **Birds** have feathers and wings and most of them can fly. They have beaks and they lay eggs with hard shells. They often care for their young.



**C** **Reptiles** like the lizard have dry scaly skin and they breathe air using lungs. They lay eggs on dry land.

**D** **Mammals** have hairy skin and can sweat. The young develop inside the mother's body and are born alive. The mother makes milk in her body to feed them.

**E** **Amphibians** like the frog have smooth moist skin. They can breathe through lungs and also through their skin. They lay their eggs in water.

The bodies of fish, amphibians and reptiles have the same temperature as their surroundings. Birds and mammals have their own warm body temperature which stays the same in all weather conditions.

### Do you Know?

*Next to humans, the dolphin is considered to be the most intelligent creature.*

## • The Sub groups

Each of the main groups of vertebrates can be divided into smaller groups. For example, mammals can be very different. They range from the tiniest mouse to the huge animals like elephant. Here are some of the main groups of mammals.



**Whales and dolphins** live in water. They breathe air through a blowhole.



**Herbivores** eat plants. Cows, sheep, giraffes and horses are herbivores.



**Carnivores** eat meat and have sharp teeth. Dogs and cats are carnivores.



**Primates** have forward facing eyes and hands which can use tools.

?

- 1** I have dry scaly skin and lay eggs on land. What am I?
- 2** My babies feed on milk produced by my body. My skin is hairy. What am I?
- 3** I have wings and feathers. My body is always warm and lay eggs with hard shells. What am I?
- 4** I need water for my eggs. My skin is smooth and moist and I can breathe through it. What am I?
- 5** I need water to live. I have gills, fins and scales. What am I?



### Ideas

⇒ *Vertebrates are divided into five main groups: fish, amphibians, reptiles, birds and mammals.*

⇒ *Each group contain many smaller groups.*

# Pick a plant

There are about 350,000 different kinds of plants in the world that we know of. The plant world can be divided into smaller groups like the animal world.

Make a list of 10 different plants. How would you divide them into groups.



**Mosses** are small plants that live in damp places. This is because they lose water through their thin leaves, and they don't have a transport system to carry water through the plant. Mosses reproduce by making spores instead of seeds.

**Conifers** are usually evergreen. They have thin, needle-like leaves which they keep all through the year. They have a water transport system and waterproof leaves. Conifers produce seeds which are formed inside cones.

**Flowering plants** reproduce using flowers. The flowers produce seeds inside fruits. Flowering plants have a water transport system and usually have broad waterproof leaves.

**Ferns** are much bigger plants than mosses. They have strong stems, roots and leaves. Their leaves are waterproof, so they don't lose water. Ferns have a transport system for water, so they don't have to live in damp places. Ferns make spores instead of seeds.

## Do you Know?

63,000 square miles of rainforests are being destroyed each year.

# Flowering Plants

Most of the plants we see around us are flowering plants. They range from very big plants to tiny balsams (dhe than'dimaa). Flowering plants can be sub divided into herbs, shrubs and trees.

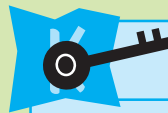
Shrubs and trees are woody and can live for many years. Some flowering plants do not seem to have flowers at all. Grass flowers are green and difficult to spot. But they are still flowers. Grass is a flowering plant.



**1** Fill in the blanks using the following words.

**Mosses cones flowering plants  
evergreen seeds ferns**

..... are small plants that produce spores and need a damp place to live.  
 ..... have a water transport system, but also produce spores. Conifers are often ..... They produce seeds which are carried in ..... The .....  
 ..... produce ..... which grow in fruits.



## Ideas

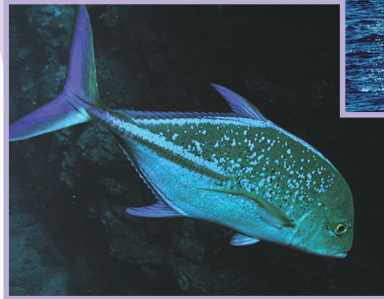
- The plants can be divided into four major groups. They are moss, fern, conifers and flowering plants.
- There are various types of flowering plants and they can be subdivided into herbs, shrubs and trees.

# How to organise your organisms

How would you classify these two organisms?

We classify living organisms by looking at the things that are similar between them, and also the things that are different.

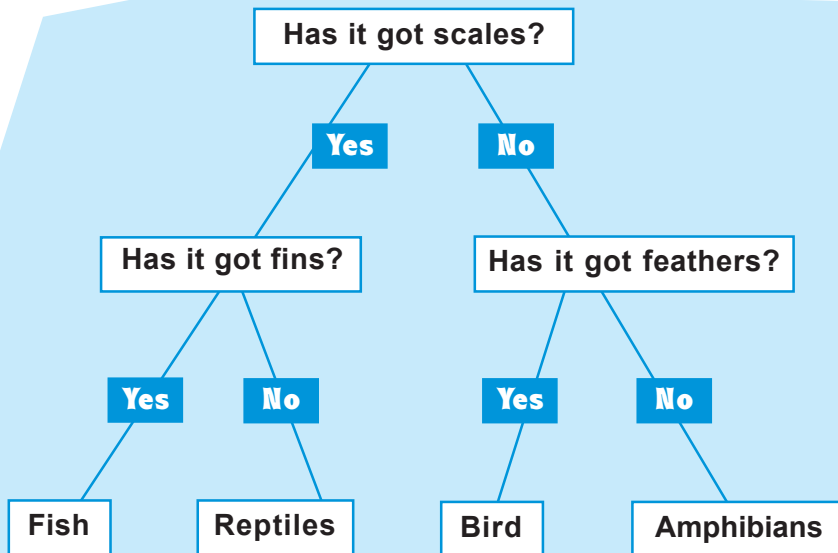
But if you happen to see a strange organism, how can you decide which group it fits into?



## Using Keys

We can find out what an organism is, using a key.

Here is a key you could use to help you identify some of the main groups of vertebrates.



You might be able to sort out these vertebrates without the key, but if you went under the sea you would find more unusual creatures.

Identify these underwater organisms using the key below.



- 1 Use the key above to help you describe the following organisms.
  - a. Eel has an ----- body.
  - b. A porcupine fish has ----- on its body.
  - c. A manta ray has a long ----- .
  - d. A pipe fish has a ----- fin.
  
- 2 The vertebrates can be divided into five groups: fish, amphibians, reptiles, birds and mammals. Choose animals that belong to each and see if you can make a branching key.



## Ideas

→ A **key** identifies organisms using simple questions about the differences between them.

# Lives in danger

Do you know that there are some animals in this planet which are very few in number?

Their number became few because of our actions. For example, Dhon Dheeni became very few in number in our country.

**The reason is we:**

- destroy the places they live.
- catch them and keep them as pets.
- sometimes use them for food.



So they are in a position called **Endangered species**. That is that types of organisms are in danger of survival. They are going to be wiped out from the Earth sooner or later.

## ✦ Turtles are another one

Fifty years back thousands of turtles nested every night on the beaches of Maldives islands. But now only a few are seen once a month or so.

**The reasons are that they are seriously overused:**

- for their meat and eggs
- for their tortoise shells



### Do you Know?

Wind speed in tornadoes can be as high as 700kph. In some tornadoes fish, frogs and other animals have been swept up in to the air.

## Some endangered animals around the world

### Arabian oryx

Found in Jordan, Oman and Saudi Arabia. In 1972 this animal has been almost wiped off from the region. Numbers are now increasing as animals breed.



### Giant Panda

There are around 700 animals existing at the moment. There is a real chance that they may become extinct. It means that they may become non-existent.



### Blue whale

Blue whale is the largest mammal. There are only 500 individuals today in the southern hemisphere. Before there were about 250,000 blue whales approximately.



## Preventive measures

What are your ideas about protecting these animals?

You should know that it is our responsibility to use the resources we have wisely and save them for future generations too.

One of the measures taken by our government was that the export of turtle and turtle products and the sale within the country was banned.

Dhon dheeni was declared as protected. Protected means that you are not allowed to harm the animal by any means. It is against the law to do so.

Many non-governmental organizations were also concerned about these issues.

They started conducting awareness programmes for the public about the matter.

Public awareness, education programmes, research are some of the activities that are carried internationally too.



### Ideas

Some animals are endangered because of our actions like overusing, destroying their habitats.

Protective measures are taken by the government due to this like making some organisms as protected animals.



**1** You are given a task of running an awareness programme on endangered species and you are asked to make a leaflet. Discuss among groups what you need to include in the leaflet.

# ARISTOTLE

Born in 384 B.C.



Aristotle was born in Greece in 384 BC. His parents died when he was young. He attended the famous academy in Athens to study and showed an interest in many different things. Aristotle was very observant. Like you, he tried to be exact. Aristotle saw something happen, he wanted to know the cause of it.

What ideas did this great man work out? He thought that the world was round. He also thought that the stars and planets moved around the earth and tried to explain this movement. Some of his best work was done in biology. He named over 500 different animals and tried to classify all living things into sets. He wrote the full descriptions of lions and elephants.

Aristotle described many marine creatures. The mouth of a sea urchin is still known as Aristotle's purse. He also studied bees and knew how they behaved in a hive. Beekeepers expect to get stung from time to time. Perhaps this is how Aristotle found out how a bee sting works.

As well as being an astronomer and a zoologist, Aristotle was also interested in mathematics, botany and medicine. There was hardly a branch of science in which he didn't do important work. Many of his ideas were accepted for over 2000 years. What a brilliant man!

*(J. Boyd & W. WhiteLaw 1989 John Murray)*