

Living things in their habitats

Lesson 2:

I can identify the different
characteristics of different
types of animals



Classification:

In the previous lesson you classified animals by sorting and grouping them based on their similarities and differences.

Not everyone would have sorted the exact same way you did.

However, scientists need to use a standard recognised method for classifying living things.

Think for a minute, why would a standard method for classifying be so important?



Classification:

A standard system is useful because it allows scientists to accurately identify, group and properly name animals. Without a standard system, living things could be classified and named differently by different scientists.

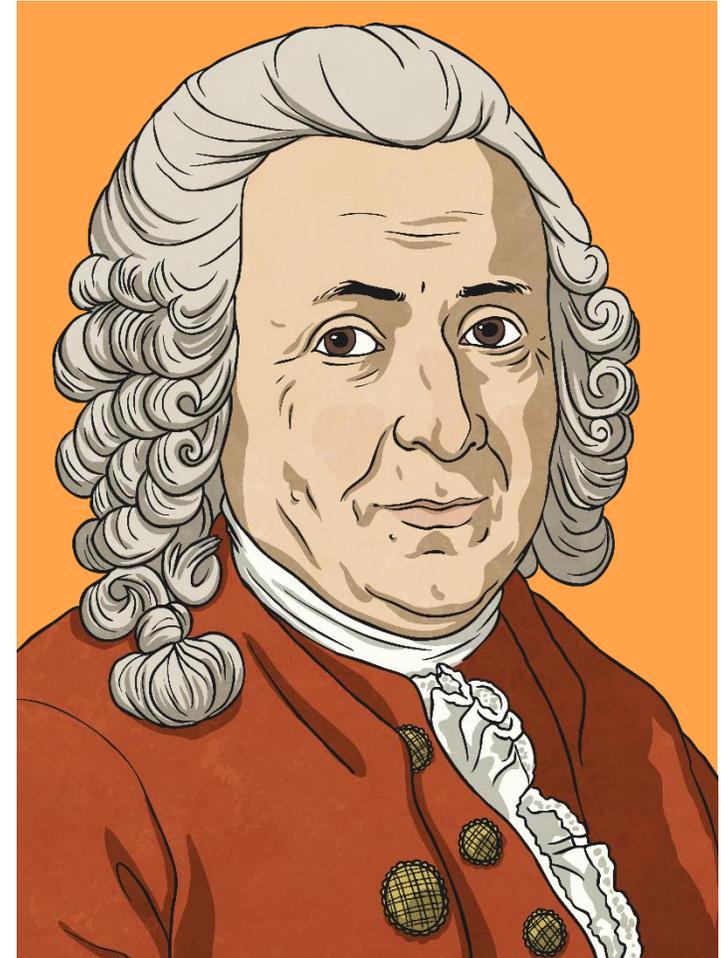


Carl Linnaeus

Carl Linnaeus was a Swedish scientist who believed it was very important to have a standard system of classification. At the time he was alive, in the 1700s, there was no agreed standard method.

Linnaeus collected and examined over 40,000 specimens of plants, animals and shells. In 1735, he published his first edition of 'Systema Naturae', which described his system for classifying living things.

Over the next several years, Linnaeus continued to publish new editions of 'Systema Naturae' that included more species of living things. His tenth edition was published in 1758 and is considered to be the most important edition.



The Linnaean System

Linnaeus' original system of classification classified everything in nature into a hierarchy.

He proposed that there were three large groups, called kingdoms, into which the whole of nature could fit. These kingdoms were plants, animals and minerals. He then split each kingdom into smaller and smaller groups, or levels.

Today, the Linnaean system is only used to classify living things, so it does not include minerals.

Furthermore, as new living things have been discovered, scientists have had to add additional levels in the hierarchy. A new level above kingdom, called domain, has also been introduced.



The Linnaean System

This diagram shows the levels of classification in the Linnaean system.

This is how living things get their scientific name.

Living things can be classified by following the levels in this system. The number of living things in each group gets smaller and smaller, until there will just be one type of animal in the species group.



There are 3 domains: Archaea, Bacteria and Eukarya. Plants and animals are all eukaryotes. There are 6 kingdoms, including animals, plants, fungi and bacteria.

The 6 kingdoms are then split into phyla. There are more than 30 phyla in the animal kingdom. Phylum chordata includes all vertebrates.

Each phyla is divided into classes. The chordata phylum includes amphibians, birds, mammals, reptiles and fish.

The order and the family divide into further groups.

The genus includes species that are very closely related and share unique body structures.

A species is defined as a group of animals that can reproduce to produce fertile offspring.

Classifying Species

Here you can see how a species can be classified at each level of the standard system.

Domain: Eukarya	jackal, clownfish, cat, dog, ladybird, daisy, rabbit, fox, human
Kingdom: Animals	jackal, clownfish, cat, dog, ladybird, rabbit, fox, human
Phylum: Chordata	jackal, clownfish, cat, dog, rabbit, fox, human
Class: Mammals	jackal, cat, dog, rabbit, fox, human
Order: Carnivora	jackal, cat, dog, fox
Family: Canidae	jackal, dog, fox
Genus: <i>Canis</i>	jackal, dog
Species: <i>Lupus</i>	dog

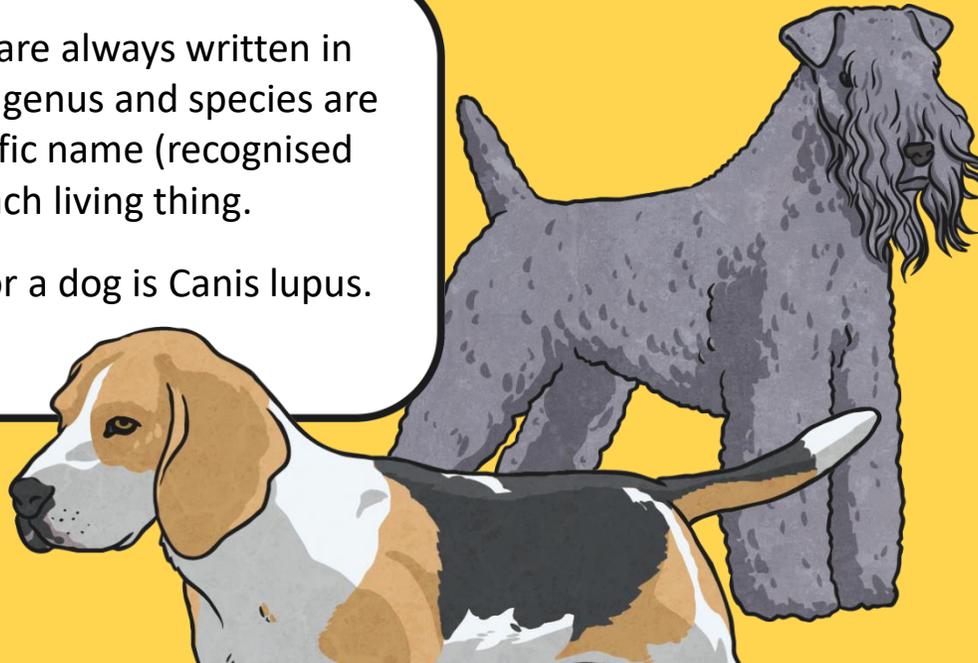
Classifying Species

Here you can see how a species can be classified at each level of the standard system.

Genus: <i>Canis</i>	jackal, dog
Species: <i>Lupus</i>	dog

The genus and species are always written in italics. The names of the genus and species are used to give the scientific name (recognised Latin name) of each living thing.

So the scientific name for a dog is *Canis lupus*.



Invent a Mnemonic

The levels of the classification system can be tricky to remember.

The letters you need to use are:



An example mnemonic could be:

Does Keep Precious Creatures Organised For Grumpy Scientists

Can you create a mnemonic to help you remember the classification system:

Curious Creatures:

In Year 4 you learnt about different types of animals.
These animals can be classified into two groups,
vertebrates and invertebrates.

What do you remember about both of these groups?

Can you remember the difference? Write the difference in
the box:

Vertebrates

invertebrates



How did you do:

In Year 4 you learnt about different types of animals.
These animals can be classified into two groups,
vertebrates and invertebrates.

What do you remember about both of these groups?

The difference is if they have a backbone or not.

Can you remember the difference? Write the difference in
the box:

Vertebrates

Have a backbone

invertebrates

Do not have a backbone



Curious Creatures:

The two groups can be split into further, smaller groups.

Groups of invertebrates:

include insects, arachnids, annelids, molluscs, crustaceans
and echinoderms.

What groups can vertebrates be sorted into?



Curious Creatures:

How many did you think of?
Vertebrates can be sorted into:
mammals, birds, fish, reptiles
and amphibians.



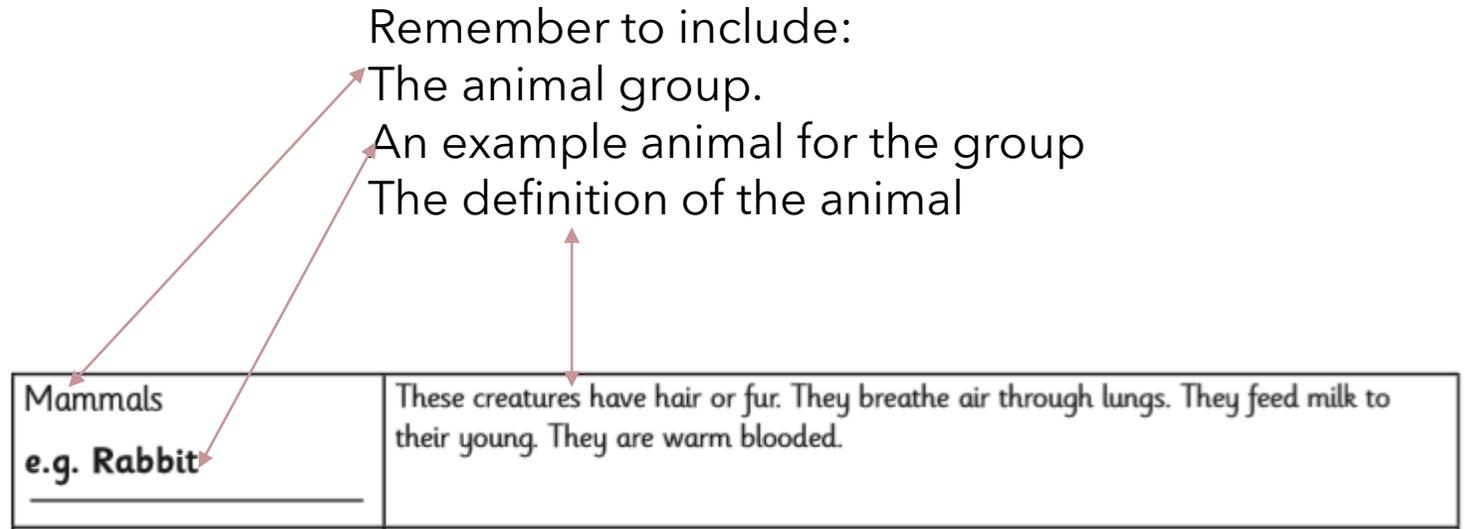
Identifying Characteristics

Each group of animals is defined by a set of characteristics. The animals in a particular group share similar characteristics, and are different to the animals in other groups. Can you recall any of the characteristics of each group of animals?

On the next page, you will need to match the characteristics to the animal groups.

Write this out in your books.

One has been done for you:



Groups of animals:

Mammals _____	These animals have hard, scaly skin, and are cold blooded. They use lungs to breathe air and they lay their eggs on land.
Birds _____	Most of these cold blooded animals have a soft body covered by a hard shell. Some live on land, and move slowly on a flat sole called a foot. Others live in water and attach themselves to rocks or other surfaces.
Fish _____	These animals live on land or in water. They are cold blooded. They use gills to breathe when they are young, and use lungs to breathe when they are adults. They have moist, smooth skin and have 4 legs. They lay eggs in water.
Reptiles _____	These animals have 2 legs and a beak. They have feathers and wings. Some can fly, while others can't. They lay eggs on land. They are warm blooded.
Amphibians _____	Most of these animals have 4 pairs of legs. The front pair of legs may be used for holding their prey and feeding. They have a hard exoskeleton and jointed legs for walking. They do not have antennae. They are cold blooded.
Insects _____	These animals have an exoskeleton covering their body. Their body is made from 3 parts: the head, the thorax and the abdomen. They have a pair of antennae on their head. They are cold blooded.
Arachnids _____	These creatures have scaly skin and live in water. They use gills to breathe. They have fins. They lay their eggs in water, and they are cold blooded.
Annelids _____	These are marine creatures, which means they live in the ocean. They have arms or spines that radiate from the centre of their body. The central body contains their organs and their mouth. They are cold blooded.
Molluscs _____	These creatures do not have any limbs. Their body is divided into segments. Some of them have bristles on their skin, while others have very small bristles and their skin seems smooth. They are cold blooded.
Crustaceans _____	These creatures have hair or fur. They breathe air through lungs. They feed milk to their young. They are warm blooded.
Echinoderms _____	These creatures have a hard external shell that protects their body. They have a head and abdomen. Many of these animals have claws that help them with crawling and eating. They are cold blooded.

Curious Creatures

When a new species of animal is discovered, taxonomists observe its characteristics to decide how to classify it. However, some animals are so unusual that taxonomists struggle to classify them.

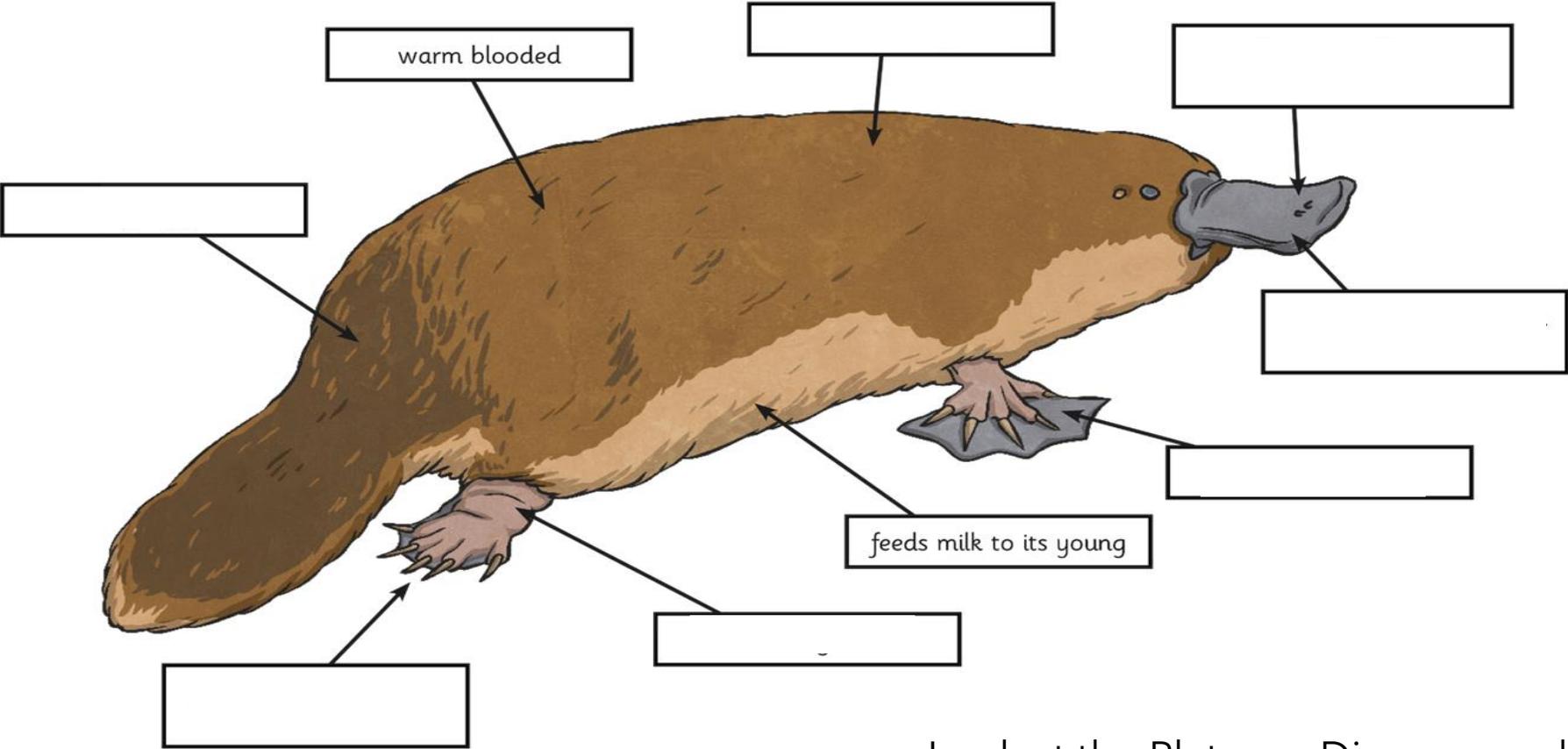
The platypus was discovered in 1797, and scientists around the world joined the attempt to classify this unusual animal. It seemed to have characteristics from several different types of animals!

Look at the Platypus Diagram and its characteristics. Write around the image your thoughts and ideas for how to classify this animal.

Use your completed Characteristics Activity Sheet to help you.

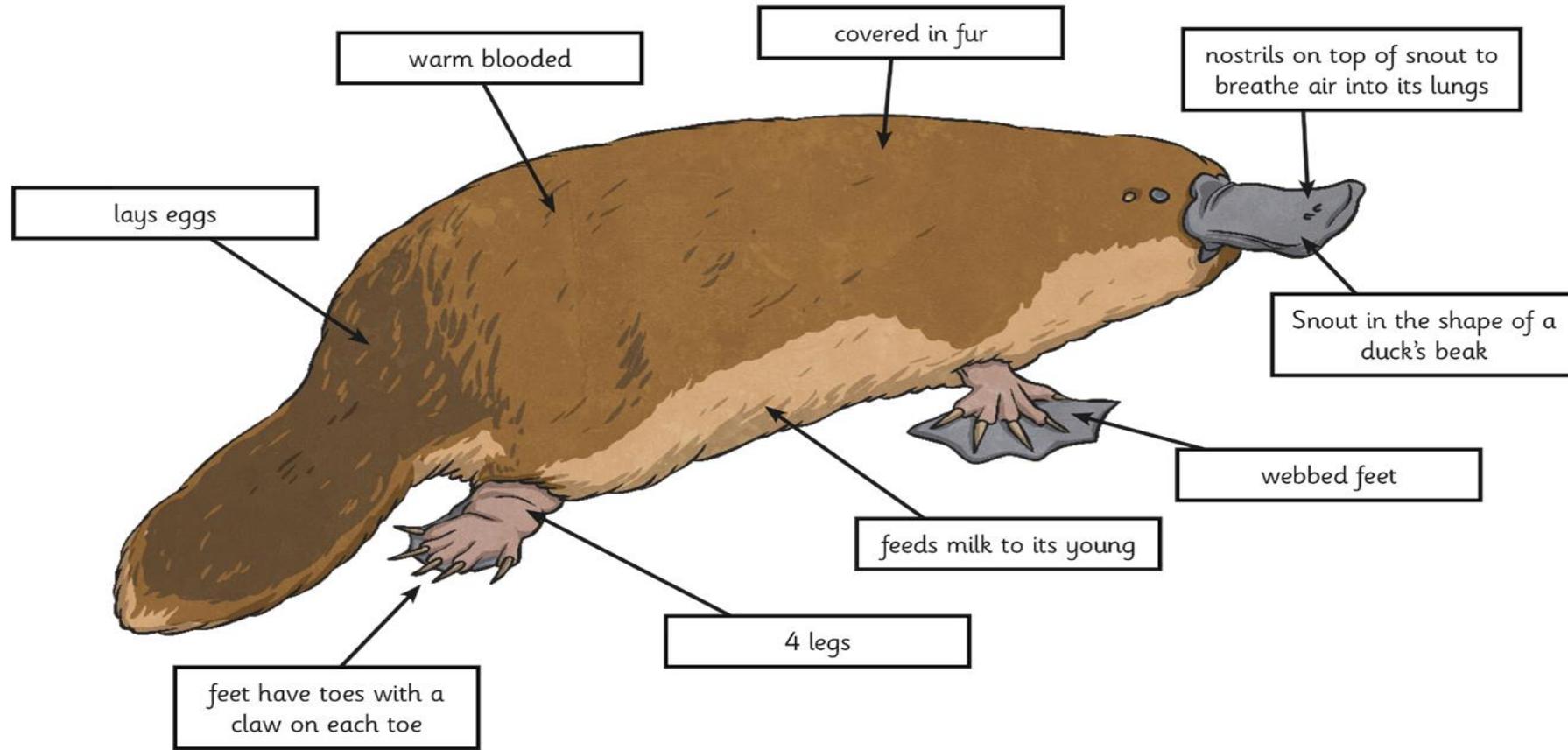


What characteristics does this animal have? Write them around the animal. Some have been done to help.



Look at the Platypus Diagram and its characteristics. Talk to an adult about which groups of animals this curious creature could fit into.

How did you do?



Look at the Platypus Diagram and its characteristics. Talk to an adult about which groups of animals this curious creature could fit into.

It took taxonomists and other scientists nearly 100 years of discussions and arguments to agree on a classification for the platypus!

Some thought it was a reptile, because it lays eggs. Others thought it was a bird, because of its beak shaped snout and the facts that it lays eggs and is warm blooded.

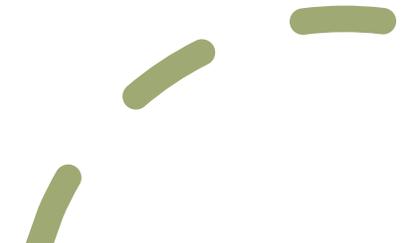
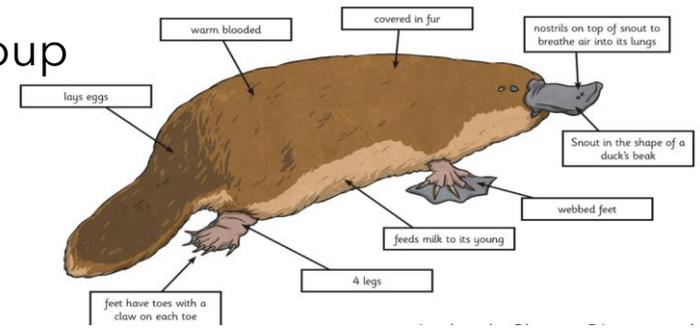
It is now agreed that the platypus is a mammal, because it has fur, it feeds milk to its young and it is warm blooded. It does not have wings or feathers, so can't be a bird. It does not have hard scaly skin, so cannot be a reptile.

How could you classify this strange creature?

Use your knowledge of classifying the Platypus and do the same for this curious creature:



Identify the characteristics of this animal like you did with the platypus. What group animal would this creature fit into?



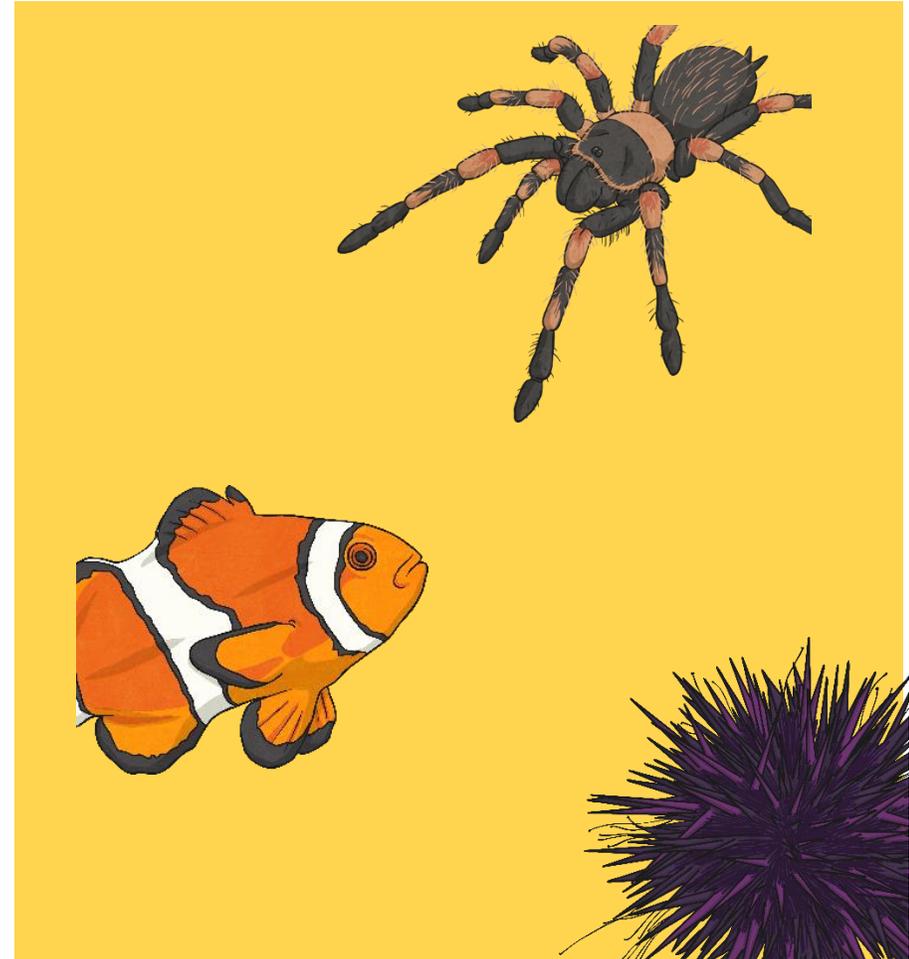
Activity:

Imagine you have discovered a new creature. You will draw a picture of your animal and create a fact file detailing its characteristics.

Before you design it, think about what group of animals it will belong to. Make sure you include the characteristics of that group.

For example, you may want to design a new species of arachnid. It should have 4 pairs of jointed legs and be cold blooded. Its front pair of legs may be used to hold its prey. It should not have antennae. Your new animal could then be any shape, size or colour as long as it displays these characteristics.

The next page is there as a guide only.



Use as a guide only – A created creature and an example of a fact file.

Diagram of animal



Distribution (countries it lives in): Found in Central and South America

Habitat: Lives in humid, conditions such as swamps, rainforests

Cold or warm blooded: The Spike-a-thang is warm blooded.

Appearance (including its skin, body parts and skeleton)

Similar to a porcupine it has giant spikes covering its body.

It has webbed feet like a lizard to help climb up things.

It is about the size of a small dog. This image is of a male. The female version is similar but less aggressive looking. Teeth are not as pointy as the males are the hunters who bring food back to their female.

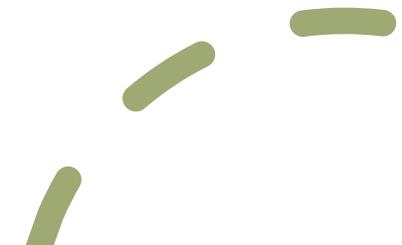
Reproduction:

The female lays eggs and protects the nest by sitting on or near the eggs for until they hatch, which usually takes 3-4 months.

Respiration (breathing)

Like other warm blooded mammals, the Spike-A-Thang breathes oxygen through their lungs.

Create your animal here. Once you have created your animal, create a fact file.



Extension: Create a report about your animal. This slide and the next two slides are examples of reports on animals to help you.

The Sneaglegator

Title. This is the name of your invented creature.

The sneaglegator is a rare form of animal that only hunts at night.

Sneaglegators are easy to identify because they have similar features to snakes, eagles and alligators. They are the size of a cat and covered in slimy scales and thick feathers. Adult sneaglegators are usually a dark green colour which enables them to hide among the trees and undergrowth of the rainforest. However, juveniles are born with a bluish tinge to their scales and no feathers.

Sneaglegators are found in most rainforests, especially in the canopy and a few have been found hiding among the undergrowth. They usually nest high up in the boughs of trees and, because they only hunt at night, are rarely seen by human eyes.

While most rainforest animals have adapted to like the rain, sneaglegators do not. Rather than getting wet, the sneaglegators hide beneath large trees to try to keep their feathers dry. Interestingly sneaglegators do not need water to survive but gain all the moisture they need from their prey. These elusive creatures are meat eaters but have been known to snaffle the occasional banana. While their wings are big and strong, they do not fly very far due to the fact that branches obstruct their wings. Instead you will find them hopping from branch to branch and using their wings to glide after their prey.

Very few humans have ever seen a sneaglegator and naturalists believe that they are not dangerous to humans. Scientist are concerned that sneaglegators might be mistaken for other species and therefore become hunted. Where nests have been discovered, their location has been kept a secret. To protect these mysterious creatures, all animal lovers should try to raise awareness of the animals. It would be a disaster if another rainforest creature became extinct.

Written in paragraphs:

Paragraph 1: an introduction. A brief explanation of your animal.

Paragraph 2: Identifiable characteristics: What does it look like? Does it look like anything else?

Paragraph 3: Habitat. Where can you find your creature?

Paragraph 4: Diet. What does it eat? How does it get its food?

Paragraph 5: Interesting facts.

Extension: Create a report about your animal. This slide and the next two slides are examples of reports on animals to help you.

Here is another example of an animal report to help you.

Elephants



Elephants are the largest land-dwelling mammals on earth and they can live up to 70 years.

Elephants are brown to dark grey in colour and have long, coarse hairs sparsely covering their bodies. They have very thick skin that keeps them cool. Elephant trunks serve as another limb and they may contain more than 40,000 muscles that help the elephant use it to gather food and water. They also have large ears and thick tree-trunk-like legs to support their weight.

There are two species of elephants: the African elephant and the Asian elephant. There are a number of differences between the two species: overall size, ear size, tusks and shape of the back and forehead among others.

The basic diet of the elephant includes grasses, leaves, bamboo, bark and roots. Also they are known to eat crops like banana and sugarcane which are grown by farmers. Adult elephants eat 300-400 lbs of food per day.

African savannah elephants are found in savannah zones in 37 countries south of the Sahara Desert. African forest elephants inhabit the dense rain forests of west and central Africa. The Asian elephant is found in India, Sri Lanka, China and much of southeast Asia.

Elephants form deep family bonds and live in tight family groups of related females called a herd. The herd is led by the oldest and often largest female, called a matriarch. Herds consist of eight to 100 individuals depending on terrain and family size. When a calf is born, it is raised and protected by the whole matriarchal herd. Males leave the family unit between the ages of 12 and 15 years and may lead solitary lives or live temporarily with other males.

Habitat loss is one of the key threats facing elephants. Increasing conflict with human populations taking over more and more elephant habitat and poaching for ivory are additional threats that are placing the elephant's future at risk.