

Science

Topic: How does living things adapt to survive?

Year 6

Strand: Living things and their habitats

Life cycles

Life Cycle

A life cycle shows how things are born, how they grow and how they produce. All animals, including humans, are born, they get older and bigger and some will go on to have children. We call this a life cycle.

Life cycles of a mammal, insect, bird and an amphibian

Life cycle of a mammal



- Live young born
- Grow from babies to adults
- Reproduce
- Live young born

Life cycle of an insect



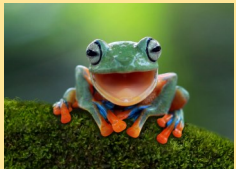
- Egg
- Growth to adult or metamorphosis to adult
- Reproduce
- Egg

Life cycle of a bird



- Egg
- Growth to adult
- Reproduce
- Egg

Life cycle of an amphibian



- Egg in water
- Growth to adult
- Reproduce
- Egg In water

Life cycle of mammals and birds

Similarities

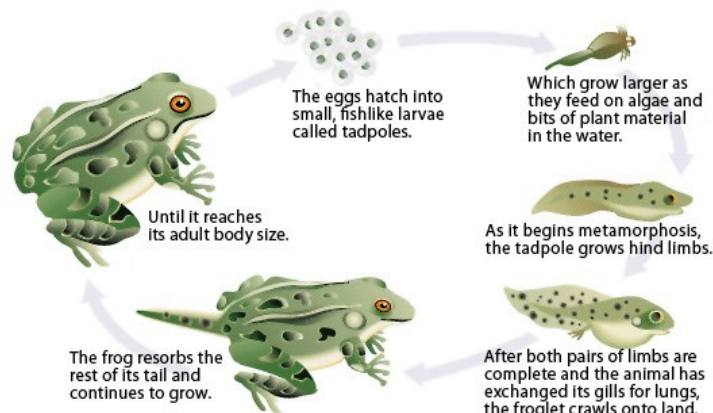
- 3 main stages
- First stage is where embryo forms and grows
 - Second stage is where young is supported by parents.
 - Third stage is adult stage where rep

Differences

- Mammals give birth to live young
- Birds lay eggs
 - Mammal usually nursed by mother
 - Young birds usually fed by adult male and female.

Amphibians

The lifecycle of a frog involves 5 main stages



Key Vocabulary

Taxonomy	The part of science focused on classification
Classification	Grouping something using its features
Distinguish	Recognise a difference
Chlorophyll	The green colouring matter found mainly in the chloroplasts of plants that absorbs energy from sunlight to produce carbohydrates from carbon dioxide and water during photosynthesis.
Species	a group of animals, plants or other living things that all share common characteristics
Metamorphosis	A process some animals go through to become adults. It is a series of physical changes
Amphibian	Cold-blooded vertebrate animals (e.g. frogs) that have gills and live in water as larvae but breathe air as adults
Gestation	The period of time that a mammal carries her offspring, or babies, inside her body before giving birth
Embryo	An animal or a plant in its earliest stage of development

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Mammals

The lifecycle of a mammal involves 3 main stages



Gestation: Embryo growing inside the mother, where it is completely reliant upon the mother.

Independent adult usually seeks company from the opposite sex and mates. Adult female nurses their young.


Mammals:

- have hair or fur
- warm-blooded
- feed babies milk
- give live birth

Young: Main period of growth and developing independence from the parents.

Insects

Most insects undergo complete metamorphosis. This involves 4 main stages



Eggs are laid by the female insect.

The **pupa** is formed when the larva moults for the last time. Pupae have a hard protective coating and are often camouflaged. The larva transforms completely inside the pupa.

The **adult** breaks out of the pupa and matures.

Insects:

- hatch from eggs
- some look like parents and shed skin as grow
- some go through metamorphosis young and adult are different.

The eggs hatch into **larva**. The larvae look nothing like the adult. This varies depending on species. Common forms are caterpillars, maggots, grubs.

Jane Goodall



Jane Goodall is a British scientist who has studied chimpanzees for many years. She is considered to be the world expert on chimpanzees and their behaviour.

In 1960, Goodall was appointed as a chimpanzee researcher in what is now called Tanzania in Africa, to observe the chimpanzee troop living there. She used unusual methods, such as giving the chimpanzees names. At that time, scientists working with animals would use numbers to identify the animals, so they didn't get too attached. Goodall's methods allowed her to observe the chimpanzees' personalities and emotions. She found that the chimpanzees had strong family bonds that would last for the whole of the chimpanzees' lives. She observed family members hugging, kissing, patting each other on the back, and even tickling each other.

Skills I will develop

- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
 - recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution



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Classification

Scientists believe that there could be as many as 10 million different species on Earth. It would be very hard to study the lives and behaviours of all these living things without grouping them together somehow. Scientists sort and group living things according to their similarities and differences. This is called classification. Scientists who classify living things are called taxonomists.

Grouping Living Things

Animals can be put into one of two groups:

Vertebrates

Invertebrates

Vertebrates can be split into:

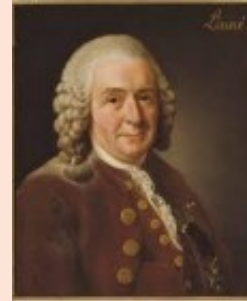
mammals, birds, fish, reptiles and amphibians

Invertebrates can be split into:

insects, arachnids, annelids, molluscs, crustaceans and echinoderms

Carl Linnaeus

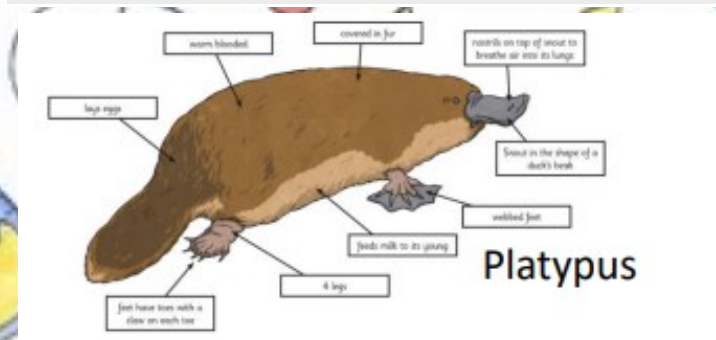
Carl Linnaeus was a Swedish scientist who believed it was very important to have a standard system of classification. At the time he was alive, in the 1700s, there was no agreed standard method.



In 1735, he published his first edition of 'Systema Naturae', which described his system for classifying living things. Linnaeus' original system of classification classified everything in nature into a hierarchy.

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 charac-



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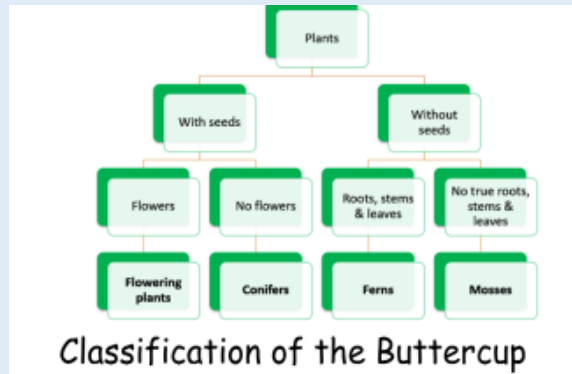
The Seven Levels of Linnaeus' System



This phrase will help you remember the order:
Keep ponds clean or frogs get sick

Classifying Plants

There are around 400,000 species of green plants. Every member of the plant kingdom contains the chemical chlorophyll which they use to make their own food and which makes them green.



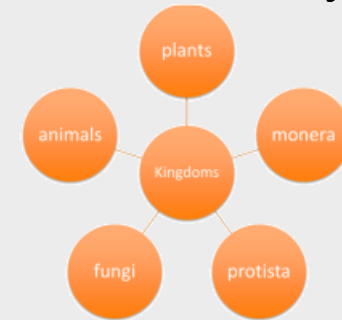
Kingdom Fungi:

Mushrooms look like plants, but do not produce their own food

The first big division of living things is to put them into one of the five kingdoms.

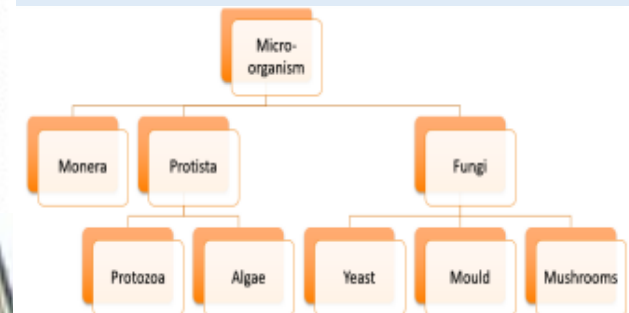
Most insects undergo complete metamorphosis.

This involves 4 main stages



Classifying Microorganisms

Microorganisms are very tiny living things. They are so small that they are not visible to the naked eye, so a microscope is needed to see them. All microorganisms share similarities and differences, and can be classified using the Linnaean taxonomic system



Skills I will develop

- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals give reasons for classifying plants and animals based on specific characteristics.
- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

Kingdom Monera (bacteria)

- Single-celled organisms
- Can cause illness
- Can also be helpful - bacteria are used to make cheese and yoghurt!

There are 40 million bacterial cells in just 1 gram of soil

