

**Year: 6**

**Term: Spring**

## Science: Living Things and their Habitats

### Prior Knowledge

Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats)

Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats)

Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats)

Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)

### Key Knowledge

Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals

#### Grouping living things

Animals can be grouped into vertebrates (animals with backbones) and invertebrates (animals without backbones).

#### Vertebrates

Vertebrates are animals with a backbone.

There are 5 ways that vertebrates can be grouped: Fish, amphibians, reptiles, birds and mammals

Characteristics of a fish: Breathes with gills/lays eggs in water/has fins and scales/body temperature changes

Characteristics of an amphibian: Born with gills then develops lungs/lays eggs in water/damp skin/body temperature changes

Characteristics of a reptile: Breathes with lungs/lays eggs on land/dry scaly skin/body temperature changes

Characteristics of a bird: Breathes with lungs/lays eggs with hard shells/has feathers/steady body temperature

Characteristics of a mammal: Breathes with lungs/babies are born live/body hair or fur/steady body temperature/feeds babies milk

#### Invertebrates

Invertebrates are animals without a backbone.

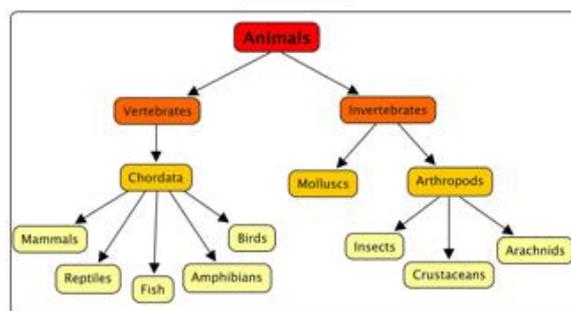
There are 3 ways that invertebrates can be grouped: Insects, arachnids and molluscs

Characteristics of an insect - 3 body sections, 6 legs

Characteristics of an arachnid - 2 body sections, 8 legs

Characteristics of a mollusc - slimy foot, often have a shell

#### Classification



#### Classifying animals and plants

Give reasons for classifying plants and animals based on specific characteristics.

Key features to distinguish between animals:

Invertebrate or vertebrate/mammal, reptile, fish, amphibian or bird/colour/length/number of legs/number of body segments/distinguishing features/habitat

Key features to distinguish between plants:

Flowering or non-flowering/grass, cereal, garden shrub, deciduous, algae, coniferous or fern/colour/height/number of flowers/fruit bearing or not/distinguishing features/usual location

#### Scientists to discuss with children

Carl Linnaeus – Born in Sweden on 23<sup>rd</sup> May 1707, was a leading light in the field of taxonomy and is famous for developing the first system to classify animals and plants effectively.

Domain	Bacteria	Archaea	Eukarya			
Kingdom	Bacteria	Archaea	Protista	Fungi	Plantae	Animalia
Example						
Characteristics	Bacteria are simple unicellular organisms.	Archaea are simple unicellular organisms that often live in extreme environments.	Protists are unicellular and are more complex than bacteria or archaea.	Fungi are unicellular or multicellular and absorb food.	Plants are multicellular and make their own food.	Animals are multicellular and take in their food.

### Key Vocabulary

Prior vocabulary - habitat, microhabitat, nocturnal, adaptation, hunt, food chain, hibernate, conservation, growth, absorbent, birth, decay, reproduction, dead, life cycle, source, nutrients, environment, food chain, energy, movement, respiration, sensitivity, nutrition, excretion, reproduction, vertebrates, invertebrates, gills, fins, scales, lungs, kingdom, classify, algae, arachnid, mollusc, pollution, amphibian, mammal, sexual reproduction, asexual reproduction, inherit

Working scientifically vocabulary – prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis, line graph, relationship, outlier

Annelid	A segmented worm
Arachnid	An animal that has eight legs and a body formed of two parts
Crustaceans	Mostly live in water with a hard shell and segmented body
Microorganism	A microscopic organism, especially a bacteria, virus or fungus
Arthropod	Animals with a hard shell on outside of their bodies, legs with joints, and no bones inside their bodies.
Abdomen	The rear part of the body of an insect.
Antenna	A pair of long, thin body parts on the head of insects, crabs and other animals used to feed and smell.
Taxonomy	System of classifying plants and animals by grouping them into categories according to their similarities.

Additional vocabulary to discuss across the unit – jointed limbs

### Key skills

Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.

Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

Using test results to make predictions to set up further comparative and fair tests.

Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations

Identifying scientific evidence that has been used to support or refute ideas or arguments.

### Future Learning

Differences between species (KS3)

### Deepening and broadening the knowledge and understanding for GDS learners:

- decides which group a variety of unfamiliar animals or plants belong to
- identifies the further subdivision of broad groups e.g. *invertebrates could be divided into; insects, molluscs, crustaceans, corals, arachnids, worms etc*

### Key Questions:

#### 1. How are living things classified?

*Children recap and learn the main groups that living things are classified as. They will be introduced to micro-organisms as a further group and explore some examples of various living things to classify.*

#### 2. Why is Carl Linnaeus known as the 'Father of Taxonomy' and how can taxonomy be used to explain how organisms are related to each other?

*Children will research the work of Carl Linnaeus, the binomial system he designed and explain and present their findings about him and his work on taxonomy.*

**3. Which types of invertebrates exist in our local environment?**

*Children will explore invertebrates in the local environment, collect, take photographs of them and use scientific diagrams to record some of their features. They use their previously collected images, research and understanding of invertebrates (e.g. molluscs, worms, insects, crustaceans) characteristics, to design and create their own classification keys.*

**4. Can I classify plants?**

*Children use information about the characteristics of an unknown plants to assign it to a group. They will classify plants and animals, presenting this in a range of ways e.g. Venn diagrams, Carroll diagrams and keys.*

**5. Why are micro-organisms classified as a living things and how do scientists classify them?**

*Children explore the groups of micro-organisms and why they are classed as living things. Investigate where different types are found and whether they are harmful or helpful.*

**6. Can we investigate whether yeast is alive?**

*Children carry out predictions and an investigation into yeast relating their results and conclusion to their scientific knowledge from the unit.*