

YEAR 6 UNIT 1: Living things and their Habitats. (Classifying Critters!)

Enquiry Question: How are living things classified and why?

Related units: Year 4 Unit 4: How are animals grouped?

Year 5 Unit 3: Circle of Life! - How do life cycles vary?

Unit overview

National Curriculum Link Year 6: Living things and their habitats.

Children will 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. They will give reasons for classifying plants and animals based on specific characteristics. They will build on their learning about grouping living things in year 4 by looking at the classification system in more detail. They will be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. Through direct observations where possible, they will classify animals into commonly found invertebrates such as insects, spiders, snails, worms and vertebrates such as fish, amphibians, reptiles, birds and mammals. They should discuss reasons why living things are placed in one group and not another. They might find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification. This builds on children's prior knowledge that two of the main groups of living things are animals and plants; that the animal kingdom has two groups, vertebrates and invertebrates; that invertebrates can be subdivided into groups such as insects, arachnids etc; that vertebrates can be subdivided into groups such as amphibians, fish, birds, mammals etc; some of the features of animals and plants; that fungi and microbes exist; that germs cause diseases; and that there are ways to classify living things and that there are invertebrates and vertebrates.

Scientific vocabulary

Organisms
Flora
Fauna
Vertebrate
Invertebrate
Insect
Mammal
Bird
Amphibian
Reptile
Fish
Fungi
Mushroom
Bacteria
Species
Fermentation
Microbe
genus

Activities and working scientifically learning outcomes

Animal, vegetable or mineral?

Use classification keys.

The key to it all

Use classification keys.

Marvellous microbes

Plan different types of scientific enquiries to answer questions.

Fabulous fungi

Plan different types of scientific enquiries to answer questions.

Vegetation

Use classification keys.

Carl Linnaeus

To know about the life and work of a scientist – Carl Linnaeus.

Cross-curricular links

English: Biography of Carl Linnaeus. Non-chronological report on Microbes

Maths: Data collecting and recording i.e. pictograms, bar graphs

Assessment

1. Explain the differences between fungi, plants and microbes
2. Describe how a sandwich could go mouldy
3. Name the five kingdoms of classification
4. Explain what Carl Linnaeus discovered

Teacher knowledge

Living things are divided into groups, with members of each group having similar features. The obvious first grouping would be whether something was a animal or a plant, which was covered in Year 4. Here, children consider the other three groups of fungus, monera (microbes) or single-celled organism called protists. Each time living things are divided by particular characteristics, the groups become smaller until we end up with the organism being 'identified'.

This process of grouping in smaller and smaller groups lead us to look back and see what the ancestors or precedents of an organism are.

The animal kingdom can be divided into two broad groups based on whether they have a backbone (vertebrate) or not (invertebrate)>

The plant kingdom can also be divided into two groups, flowering and non-flowering plants.

Invertebrates are animals without backbones. They range from totally soft-bodied animals such as sponges and jellyfish, shelled animals such as mussels and barnacles to complex spiders and insects. Some invertebrates have an exoskeleton (exo = external or out) rather than internal, some have no hard structures at all. They are subdivided into (initially), protozoa, annelids (worms), echinoderms (sea urchins), molluscs and arthropods (insects, crustaceans and arachnids).

There are some obvious differences between plants and animals. Plants are green – they can photosynthesise, whereas animals cannot. Organisms such as coral are often thought to be plants, when in fact they are, actually, animals, but this can only be seen at the cellular level.

Many children think that fungi are plants, but they are a separate kingdom. Many fungi play the role of decomposers, breaking down plant and animal material. Mushrooms and toadstools are the reproductive parts – they appear above ground to spread spores. A field of mushrooms forming a fairy ring are usually all part of the same single organism. The mould that grows on our food is also a type of fungus. Other single-celled fungi, such as yeast, ferment sugar and produce ethanol (alcohol) and carbon dioxide gas. They are very important in making bread, as the gas causes bubbles in the dough and makes the bread rise.

Bacteria are a large and diverse group of single celled organisms without a nucleus. They are microscopic and found almost everywhere on Earth. They can live in extreme environments, from boiling hot springs to deep in the oceans and even growing on nuclear waste. They are found in the intestines of many animals, including humans, and aid digestion. Other bacteria can cause infectious diseases such as cholera, tuberculosis and bubonic plague. Bacterial infections can be treated by antibiotics.

Building on work carried out on animals, the children need to meet the idea that plants are also subdivided into groups. Plants are initially split into two groups, flowering, and non-flowering. Some plants appear to produce flowers, but these are, in fact, coloured leaves called bracts. Grasses which don't appear to produce flowers, in fact do! This might lead to the definition of a flower to be discussed as a structure that produces pollen rather than something that looks pretty to humans.

Carl Linnaeus is the father of the classification system as we know it today. Linnaeus is famous for his work in taxonomy, the science of identifying, naming and classifying organisms (plants, animals, bacteria, fungi, etc.). Linnaeus realised that new plants were being discovered and named, but nobody gave much thought to which family or group they might belong to or resemble. He started to classify plants into 24 classes according to the number and position of their stamens and pistils. Although later botanical knowledge revealed that this system was inadequate, it did lay the foundation for the science of plant taxonomy.

Did you know:

- A species is usually defined as individuals that can reproduce (have children).
- Pears, peaches and apricots are a member of the rose family.
- Peanuts aren't nuts at all, but a bean.

- On average, 1g of soil contains 40 million bacteria.
- A prairie dog is not a dog at all – it is a type of squirrel, which is a type of rodent.
- It's all in the classification!

Misconceptions: Children might think that...

- coral is a plant; in fact it is a living thing.
- there are only two groups of living things – animals and plants; in fact living things are divided into many other groups which will build on children's prior learning in Year 4.
- plants are green and 'traditionally plant-like'; in fact, the plant kingdom can be divided into two groups, flowering and non-flowering plants.
- all animals move and have legs
- fungi aren't alive
- microbes are always bad;
- fungi are plants; in fact they belong to another group called fungus.
- germs are not alive.

Resources

- www.bbc.co.uk/learningzone/clips/the-binomial-system-of-classification/12892.html
- www.kidport.com/refib/science/animals/AnimalIndexInv.html has information on classification for children.
- www.ducksters.com/science/scientific_classification.php has useful information and facts for children on classification.
- Video about the spread of bacteria: <http://web.archive.nationalarchives.gov.uk/+www.nhs.uk/Video/Pages/catch-it-bin-it-kill-it.aspx> or use <https://www.youtube.com/watch?v=zT9fxhrjoQc> Information films around public health: www.nationalarchives.gov.uk/films/1945to1951/flmpage_cas.html
- Videos of amoeba and other protists: www.microscopyu.com/moviegallery/pondscum/amoeba/
- www.famousscientists.org/carolus-linnaeus/ will help with research about Linnaeus.
- www.saps.org.uk/attachments/article/560/SAPS%20Grouping%20&%20classification%20-%20
- PartE.pdf has a great series of activities for summer use.

