

Biodiversity is the variety of living things in the environment. Living things (plants or animals) are called **organisms**. Different organisms are found in different places. For example, polar bears are found in the Arctic, and cactus plants are found in deserts.

Organisms are found in certain places because of reasons that scientists call **factors**.

Some of these factors **involve other living things**. These are called **biotic factors**. For example, worms live underground where birds can't easily eat them.

Examples of biotic factors are:

Predators

Competition

Disease

Factors which **don't involve living things** are called **abiotic factors**. (Abiotic is the opposite of biotic.) For example, bluebells grow in woods where there is not too much light.

Examples of abiotic factors are:

light level

temperature

pH of soil

soil moisture

Abiotic factors can be measured, for example:

- Temperature can be measured using a temperature probe or thermometer.
- Dissolved oxygen can be measured using an oxygen meter.
- Light intensity can be measured using a light meter.



Keys

Living things can be identified using keys. You should be able to use a **branched key** or a **paired statement key** to identify living organisms.

Sampling

Scientists count living organisms by using sampling techniques, for example:

- Quadrat frames can be used to count the numbers of different types of plants.
- Pitfall traps can be used to count insects.

How humans affect biodiversity

Biodiversity is important to humans because we depend on plants and animals for oxygen, food and medicines. We can affect biodiversity by grazing animals, building towns, cutting down trees (deforestation) and pollution.

Competition

In every ecosystem there is a continual struggle for survival.

- Plants compete for space, light, and water.
- Animals compete for food, territory, water or mates.

Competition only happens when resources are limited (if there is plenty food, animals don't have to compete for it).

Competition between organisms of the same species is often fiercer, because they are competing for the same things.

Survival depends on successfully overcoming competition. '**Survival of the fittest**' means that the living things best adapted to their environment will be able to breed. Plants and animals which have not been able to **compete** successfully have died out (become extinct).

Evolution

Scientists believe that all living things have evolved over millions of years. Scientific evidence such as fossils supports the theory of evolution.

Organisms produce more offspring than the environment can support. There will be natural variations in the offspring – some will be bigger, or have longer necks, or be better camouflaged, or be better suited to changes in the climate. The ones which are best suited to their environment are more likely to survive. They can then go on to breed, and their offspring are more likely to be like them.

Over many generations, this **natural selection** results in changes to the population.