

Biological diversity - variety of life on the Earth.

Ecosystems, Species and Genetic Diversity

A **species** is a particular group of organisms that have the same structure and can reproduce with each other. Of the 30 – 100 million possible different species of living things, there are over 1.5 million species of animals and 350,000 species of plants that have been identified by biologists. The most successful life form seems to be the insect.

The entire collection of living organisms, each with their own unique characteristics, makes up the Earth's **biodiversity**. "Biological diversity refers to the variety of species and ecosystems on the Earth and the ecological processes of they are a part of." The **main components of biodiversity** are:

Ecosystem diversity – the different types of living communities and the environments, such as marshes, lakes, streams and forests, in which they are found

Community (populations of different species living in the same area) **diversity** – occurs within **populations** (members of a species that live in a specific area and share the same resources) of organisms living within a particular ecosystem

Species diversity – occurs within individual organisms of the same species

Genetic diversity – occurs within organisms at a cellular level, as it describes the variety of genetic material in all living things.

Species Distribution – Plant and animal species are not distributed evenly throughout the various eco-regions of the world. Most of the different species of plants and animals can be found in tropical regions and, more specifically, in the rainforests. As you move closer to the poles of the Earth, there is less biological diversity.

Biological Diversity Classification

The two-name Latin naming system for all living things was developed by Carolus Linnaeus in the 18th century, enabling scientists, around the world, to refer to the same species, by the same name. This classification system was much more reliable than previous systems, because he used structure, rather than habitat. Two words identify each organism. The 1st represents the organisms **genus** and the 2nd represents the organisms particular **species**. Scientists earlier had developed a system, which classifies all organisms, based on their structural differences, into [5 kingdoms](#).

Animalia (animals)
Plantae (plants)
Fungi (yeasts, moulds and mushrooms)
Protista (mostly single-celled organisms)
Monera (bacteria)

The 5 kingdom classification system can be further subdivided, with each sub-division having its own name.

- **Kingdom**
- **phylum**
- **class**
- **order**
- **family**
- **genus**
- **species**

Specialists refer to other sub-divisions as well; **subfamilies, super-orders, and sub-species or varieties**.

Biodiversity under the Sea

Coral reefs reflect a great diversity of species. Like tropical forests, coral reefs support many different communities of organisms surviving on a small amount of nutrients, which are very efficiently recycled.

Interdependence

Each and every species depends on many other species within an environment in order to survive and prosper. Food chains and Food webs represent different types of ongoing relationships between and among all the organisms, within a particular environment.

Symbiosis

A different type of interdependence is an association, within a certain population, between members of different species.

There are different types of symbiotic relationships:

- **Commensalism** – *in which one of the participating members benefits, but the other does not, and there is no harm done to that organism.*
(a bird using a tree to build its nest in)
(barnacles on a whale)
- **Mutualism** – *both organisms benefit from the relationship.*
(lichen (algae and fungi) growing in the Arctic Tundra benefit each other)
(flower Clusia provides medicine to bees)
- **Parasitism** – *one organism benefits while the other organism (the victim) is harmed. (the parasite usually doesn't kill the host, because the host represents the parasite's food supply.*
(tapeworm in a human host)
(Mexican bean beetle is a plant parasite)

Interspecies competition *happens when two or more species need the same resource. This type of relationship helps to limit the size of populations, of the competing species.*

There are many examples of these types of symbiotic relationships, which show the importance of adaptations, helping particular species survive.

Niches

*A **niche** is the role of an organism within a particular ecosystem. An organism's niche includes:*

- *What it eats*
- *What eats it*
- *Its habitat*
- *Nesting site, range and habits*
- *What effect it has on the other populations*
- *What effect it has on the environment*

A niche, for a particular organism, can change, depending on the environment in which it is located and the organisms with which it inter-relates.

Resource partitioning *is the action which enables competing species to share the resources by accessing these resources in different ways, involving less direct competition.*