

## 1. Our environment

- The **environment** of a living thing or organism includes everything that surrounds it. It is made up of the **physical** environment and the **biological** environment.
- The **physical environment** of a living thing is the combination of all the non-living components that surround it. The most important components are: **water**, **air** and **soil**.
  - Plants are green because they contain a substance called chlorophyll, which they need for photosynthesis.
- Many characteristics of air, water and soil affect the physical environment of living things. These include:
  - The amount of **light** in the environment which plants need to make food.  
Most animals also need light to see their environment.
  - The **temperature** of the environment, since most living things cannot survive in extreme temperatures.  
Only a few living things can live in very hot or very cold environments. For example, polar bears live in the Arctic and camels and cacti are specially adapted to live in the desert.
  - **Salinity** (the quantity of salt in water). Most freshwater fish cannot live in the sea and vice versa.

## 2. Ecosystems

- Living things do not live in isolation, but interact with each other in the biological environment.
- A species is a group of individuals with similar characteristics that can reproduce within that group.
- A **population** is all the individuals of the same species living in a particular place. For example, all the frogs living in a lake make up a population.
- The populations that live in a particular place are dependent on one another for survival. Together, they form a **biological community**.
- An **ecosystem** is the combination of the **biological community** and the surrounding **physical environment**. A forest's ecosystem is made up of the biological community (trees, deer, etc.) and the physical environment (soil, rocks, etc.).

## 3. Discover the biosphere

- The **biosphere** is the part of the Earth where living things are found. It extends from a height of 7000 metres to the depths of the oceans.
- There are many different ecosystems in the biosphere. Ecosystems can be **terrestrial** (land-based) or **aquatic** (water-based), depending on their physical environment.
- A **habitat** is a place where a living thing lives. The habitat of a living thing must have the right environmental conditions for it to survive there. For example:
  - A trout's habitat must have fresh, clean water and lots of oxygen.
  - A holly's perfect habitat is a cool, dark forest.

#### 4. How ecosystems work

- There are different types of relationships between the living things in an ecosystem:
  - **feeding relationships**. One living thing feeds on another.  
This is true of animals. Most animals eat plants or other animals. For example, rabbits eat grass and foxes eat field mice.
  - **competition**. Two or more living things compete for the same resources (light, food, etc.) and could be harmed in the process.
  - **symbiotic relationships**. Living things join together for a mutual advantage.
- The living things in an ecosystem are divided into various groups depending on how they feed:
  - **Producers**. Living things that can make their own food. They are always plants or algae.
  - **Primary consumers**. Animals that eat plants. They are called herbivores.
  - **Secondary consumers**. Animals that eat herbivores. They are called carnivores.
  - **Tertiary consumers**. Animals that feed on secondary consumers.
- There is another group of living things in ecosystems, called **decomposers**. They are mainly made up of bacteria and fungi. They feed on the remains of organic matter.
- The living things in an ecosystem form food chains. A **food chain** shows how living things rely on each other for food.
- A **food web** is a group of connected food chains. In a food web, we can see how the same living thing may provide food for several animals.

#### 5. How we alter ecosystems

- Humans have a direct effect on ecosystems through doing activities such as hunting, fishing and logging. In addition, we have changed many **natural** ecosystems, like forests, into **artificial** ecosystems, such as farmland or towns. These artificial ecosystems often experience problems such as **soil erosion** or **desertification**.
- Human activity can cause pollution by releasing **pollutants** into an ecosystem. A pollutant is a substance that harms humans or other living things. Soil is polluted by the use of chemical products and waste from human activity.
- It is important to follow laws that protect the environment. Protecting the environment, and the ecosystems within it, is the **responsibility** of all citizens. There are many ways we can contribute to protecting the environment:
  - When visiting the countryside, **respect** animals and plants: do not take plants home; do not feed or disturb animals; always throw your litter in the bin.
  - **Volunteer** for environmental activities, such as cleaning our coasts and forests.

#### 6. Discover endangered animal species

- Human activity can harm living things in their environment and even cause them to become extinct. In Spain, there are many species that are in danger of **extinction**. Some include: marbled ducks, brown bears, Spanish Imperial eagles, dragon trees, lady's slipper plants, Valencia toothcarps, Majorcan midwife toads, Monk seals and the Iberian lynx.