



# NATURE

Life is found nearly everywhere on Earth, from the hottest deserts to the iciest wastelands and the deepest oceans. Every natural environment is shaped by its location and by the rocks, soils and climate of that region. The plants and animals that live in each of the environments may vary hugely in appearance and behaviour, but they are all suited perfectly to the conditions in which they live.



# ECOLOGY

**E**cology is the study of how animals, plants and other living things survive together. Individual life forms hardly ever live on their own. They depend on and interact with each other, satisfying their needs such as nourishment. For example, an animal eats part of a plant, then the plant grows using that animal's droppings as fertilizer. Ecology also examines how living things fit in with their non-living surroundings, including water, soil and rocks, and how they cope with changing conditions such as weather and seasons.



The Earth



The rainforest biome



The rainforest canopy ecosystem



The canopy community



A howler monkey

Ecologists divide Earth's biosphere (1) into smaller units: biomes (2) (→10), ecosystems (3), communities (4) and niches (5).

**Adaptation** The process whereby living things change their bodies or behaviour over generations, the better to suit their environment. Animals are adapted to the climate, the food available and the avoidance of predators. For example, Arctic hares have thick fur to keep warm, a keen sense of smell to help find plants under the snow and a white coat to blend in with their surroundings.

**Biodiversity** The number of different species living in an ecosystem.

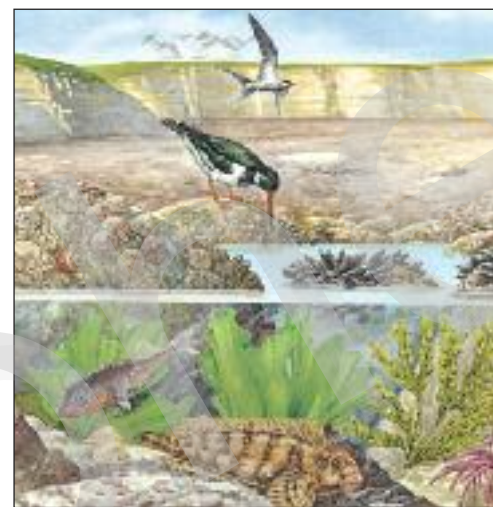
**Biomass** The total mass (weight) of all the life forms in an ecosystem.

**Biosphere** The living world. The biosphere includes everywhere on Earth where life exists, such as the land, the seas and the atmosphere.

**Climate** The pattern of weather in a particular region over a long period of time. An area's climate depends mainly on its location, but is also affected by altitude (height), and by winds and ocean currents. Regions with tropical climates have hot, wet weather all year. Deserts are very dry. Temperate regions have warm summers and cold winters. Polar lands are always very cold.

**Colony** A group of one type of animal living together. Some animals, such as ants, form permanent colonies, co-operating to feed and breed as part of a single unit. Other animals only gather in colonies to breed.

**Community** A group of different species living together in the same environment. The different species interact and rely on each other for survival.



Seashore animals must adapt to cope with sun, winds, waves and changing sea levels. Only certain animals can survive in this environment.

**Ecosystem** An area in which living and non-living things interact. An ecosystem contains several different habitats. It can be as small as a single tree or as large as a whole forest. In an ecosystem, all the different species are linked together by a food web (→12).

**Endemic** A species that only occurs within a small area, such as an island. For example, all species of lemur are endemic to the island of Madagascar.

**Environment** The living and non-living surroundings of a life form.

**Habitat** The type of surroundings in which a plant or animal lives. Woodlands, marshes and lakes are all types of habitat.

**Niche** The role, or function, that a plant or animal plays in its community. This includes aspects such as its home, its behaviour and its diet.

## STAGES OF SUCCESSION

Bare ground with little plant life

Wind-blown seeds settle on the ground and flower. Insects come to feed on the plants.



## FACTFILE

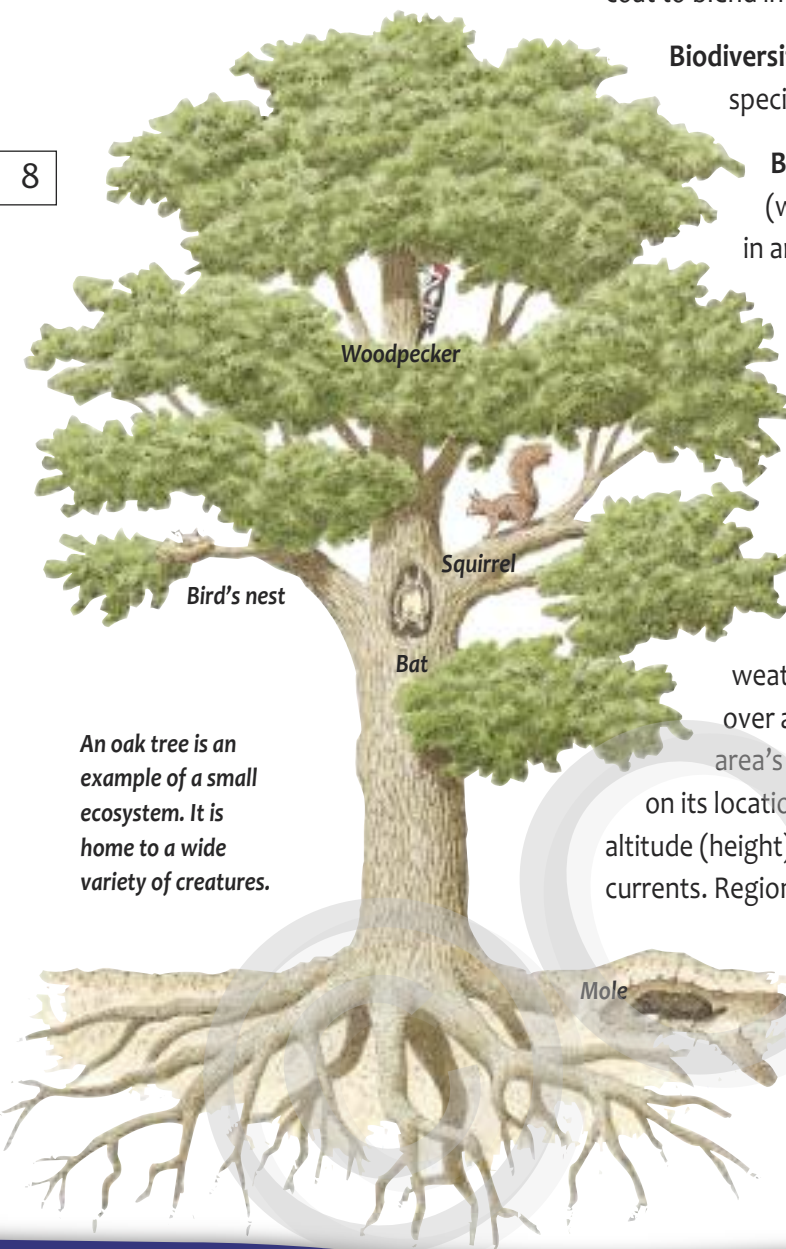
★ The word ecology comes from the ancient Greek *oikos* (ecos) meaning "house". Ecology could be described as the study of "nature's house-keeping".

★ The habitat where conditions vary the most is the coast, where the tides change the environment twice a day. One of the most constant habitats is the bottom of the sea, which is always still, dark and cold.

★ Ecology can help us to understand the impact man makes on the environment and learn to reduce the damage we cause.

**Succession** The slow, natural change of an ecosystem. For example, if a forest is destroyed, it may gradually grow back. During this process, plants and animals move to an area, altering the environment so that it becomes more suitable for other species. Eventually, the ecosystem reaches a stable point, known as a "climax".

*Trees eventually become the dominant plants. A woodland ecosystem is formed.*



An oak tree is an example of a small ecosystem. It is home to a wide variety of creatures.

Woodpecker

Bird's nest

Squirrel

Bat

Mole