

**Ecology is the science of ecosystems. Ecologists study how plants and animals live together, and what are their connections and interactions with the world around them.**

There exist many complicated and sometimes hidden links between plants and animals and their **environment**. An ecologist tries to understand how these connections work.

Living things are connected through **food chains**. Green plants use the sun's energy to make their own food. Animals then eat the plants. These animals are eaten by other animals - or by humans.

In a garden, caterpillars may eat a cabbage. Some of the energy stored in the cabbage is passed to the caterpillars. If a bird then eats a caterpillar, some of the caterpillar's energy passes to the bird. Cabbage, caterpillar and bird are all links in a food chain.



Nowadays we prefer a natural garden rather than the famous English lawn - for ecological reasons. PHOTO: LDs

Food chains are connected in many ways. They can form complicated **food webs**. Birds eat the berries of the trees. The seeds come out in the bird's droppings - new trees grow. Birds need the tree's berries for food, while the tree needs the birds to spread its seeds.

## GLOSSARY

- to connect: .....
- to interact: .....
- environment: .....
- caterpillar: .....
- seed: .....
- application: .....
- conservation: .....
- to link: .....
- to save: .....
- to cope with: .....
- to avoid: .....
- habitat: .....
- to tie: .....
- to disturb: .....
- urchin: .....
- weed: .....
- kelp: .....

Some animals live in the meadows: cattle, sheep, deer, rabbits, snails and grasshoppers feed on grass. In turn, there are many animals - such as humans - that feed on these grass-eaters.

There are many **practical applications** of ecology in conservation biology, wetland management, agriculture, forestry, city planning, community health, and economics.

Plants and animals are linked not just through food, but also through their environment. So cacti and rattlesnakes, for example, are designed by nature to live in the desert. To survive, they must have ways of saving water, keeping cool, coping with shifting sands and avoiding their enemies.

The lives of all the plants and animals in any habitat are interconnected. The living system that ties them all together is known as an **ecosystem**. Disturbing the balance of an ecosystem can have unexpected effects.

The story of the Californian sea otter illustrates such effects. Early in the 20<sup>th</sup> century, so many sea otters were hunted that they almost died out. Sea otters feed on animals such as sea urchins, and once that the sea otters had gone, sea urchin numbers exploded. The sea urchins eat all the large seaweeds (giant kelps), and underwater "forests" of kelp became bare, rocky areas. With the kelp forests gone, many fishes, which had bred in the kelp, died out. As a result, the Californian fishing industry closed down, and hundreds of fishermen and factory workers lost their jobs - all because the killing of sea otters had disturbed the balance of nature.

**Deserts, rainforests and coral reefs** are examples of ecosystems.

Even a **small pond in your garden** can be an ecosystem in itself. Why not build one?