Introducing ecosystems

Here you will learn what an ecosystem is, and how the things in it are linked to each other. (You will meet these ideas in science too.)

What’s an ecosystem?
An ecosystem is a unit made up of two parts:
- living things (plants, animals, bacteria) and
- their non-living surroundings or environment – air, water, soil and the climate (how warm or wet it is).

On the right, and on page 42, you can see part of a woodland ecosystem.

In an ecosystem, the living things interact with the environment and each other. For example the caterpillars in a wood breathe the air. They feed on leaves. They get eaten by birds. If it gets too cold they die.

How big is an ecosystem?
An ecosystem is any size you choose to study. For example:

- a pond
- a meadow
- a forest
- the Sahara desert
- the whole Earth

Each is a unit made up of living things and a non-living environment.

It all starts with plants …
In some ways, an ecosystem is like a canteen where living things eat. And it all starts with plants.

The caterpillar, wood mouse and fox are called consumers because they eat other living things.

Fungi (such as mushrooms) and bacteria feed by making things break down or rot. So they’re called decomposers.

Dead things, and waste, are eaten by earthworms, insects, fungi and bacteria.

It’s always the same pattern
The pattern is the same in every ecosystem, large or small.
- The plants make their own food. (Plants include trees!)
- The animals feed on plants, or each other.
- Decomposers feed on dead and waste material – and recycle nutrients that the plants can use again.
- Without plants, all other living things would die.

Food chains in an ecosystem
This is a food chain. It shows what eats what. The arrow means eaten by.

plant → caterpillar → wood mouse → fox

You can draw food chains for any ecosystem. They always start with plants.

Food webs
Often several consumers eat the same food. For example in an oak wood, both caterpillars and aphids (a type of fly) feed on oak leaves.

So food chains link to form a food web. This diagram shows just part of the food web for an oak wood.

The complete food web for a wood (or any ecosystem) can be large and complex.

Your turn
1. Is this an ecosystem? Explain your answer.

Using sunlight, carbon dioxide from the air, and water and nutrients from the soil, a plant can produce everything it needs for itself. So plants are called producers.

2. Copy and complete, choosing words from page 44. Plants are called ____ because they make their own food, using the gas ____ and water. Animals are called ____ because they obtain food by eating ____ and other ____.

3. Name a producer found in the school playing field.
   - a
   - b
   - c

4. Look at the food web above. What would suffer if:
   - a disease wiped out all the aphids in a wood?
   - b all the trees in the wood got chopped down?

5. Look again at the food web. If all the foxes were wiped out:
   - a what might happen to the number of wood mice?
   - b what else could happen because of the change in a?

6. 'All ecosystems depend on the sun.' Do you agree?
   Draw a diagram to help you explain your answer.