Energy flows through living things in nature

KS4 BIOLOGY Ages 11-14 ⏰ 3 min read

Where Does Energy Come From?

All energy in nature starts with the **Sun**. Plants trap **sunlight** and turn it into chemical energy stored in their leaves and stems. This process is called **photosynthesis**. When an animal eats a plant, that energy moves into the animal's body. When another animal eats that animal, the energy moves again. This is how **energy flows** through the living world.

Think of it like a relay race. The Sun passes the baton of energy to plants. Plants pass it to plant-eaters like rabbits. Rabbits pass it to meat-eaters like foxes. Each runner gets the baton, but some energy is used up running, so less reaches the next person.

Food Chains and Food Webs

A **food chain** shows one path energy takes through nature. For example: grass → rabbit → fox. But nature is more complicated. A rabbit might also eat clover. A fox might eat birds or mice too. When food chains overlap, they create a **food web**. This shows all the different ways energy can move between many living things.

Scientists call the plant the **producer** because it produces its own food from sunlight. Animals that eat plants are called **primary consumers**. Animals that eat other animals are **secondary consumers** or **tertiary consumers**. At the end, **decomposers** like fungi and bacteria break down dead things, returning energy and nutrients to the soil.

Think of it like a restaurant kitchen. The chef (Sun) gives ingredients (energy) to the cook (plant). The cook makes a meal. A customer (rabbit) eats it. Another customer (fox) eats the rabbit. Finally, the cleaner (decomposer) washes up and recycles everything.

Energy Loss at Each Level

Here's something important: energy is lost at every step. Plants use about **90%** of the sun's energy for their own growth and movement. Only about **10%** is stored and passed to the next animal. When a rabbit eats grass, it uses energy to move, stay warm, and grow. Again, only about **10%** passes to the fox. This is why there are many more plants than herbivores, and many more herbivores than carnivores.

Think of it like passing pocket money through a family. Grandma gives you £100. You keep £90 and pass £10 to your friend. Your friend keeps £9 and passes £1 to their sibling. The money shrinks each time.

Why This Matters

Understanding energy flow helps us see why **ecosystems** need to stay balanced. Removing one species can disrupt energy flow for many others. It's also why eating plants directly gives humans more energy than eating meat—we skip the animal middleman and get more of the **Sun's** original energy.