

GCSE Biology – Communities - Transcript

We might think of a community as a group of people, like a local neighbourhood. But in biology, a community is when two or more different species or populations live and interact in the same habitat.

Take this pond. Here, plants and animals interact together. We call the specific place, or type of environment, where a particular organism lives a habitat. A species is a group of similar organisms.

Members of a species can breed together successfully to produce fertile offspring. This cannot happen between different species. All the individuals of the same species living in a specific area is a population.

Two or more populations living in the same area is a community. An ecosystem is the interaction between a population or community of living organisms and their non-living environment such as the rocks or water.

Ecosystems can be as small as a pond to as large as a forest or even an ocean. Within an Ecosystem organisms are organised into levels. We call these trophic levels.

Producers are plants and algae that make their own food. In our pond this would be Phytoplankton. Primary consumers are herbivores, animals, like tadpoles that feed on producers.

Small fish, are carnivores, meaning they feed on other animals. These are the secondary consumers. And finally, we have tertiary consumers like the kingfishers. Organisms depend on each other within an ecosystem.

This fish is small enough to hide among the pondweed to avoid predators. The plants provide shelter and protection. And this pond snail grazes on the pondweed and algae growing on the rocks.

This keeps the algae levels under control. The pondweed itself produces oxygen through photosynthesis, essential for the survival of both the fish and the snail. But what happens if the number of snails drops suddenly?

Perhaps due to pollution or disease. More algae could build up and block the sunlight, reducing the amount of oxygen the pondweed can produce. With less oxygen and fewer hiding places, the small fish population might fall.

If that happens, a tertiary consumer like a kingfisher may struggle to find enough small fish and its population could decline too. This shows how a change in just one species can ripple through the whole community, affecting everything in the food chain.

Although many organisms depend on each other within an ecosystem, others compete. Plants compete for space, light, water and minerals. Animals in the ecosystem compete for

territory, mates and food. Competition can be interspecific, between different species for the same resources, or intraspecific, which is within the same species.

Individuals that outcompete others of the same species tend to grow more healthily and are likely to have offspring. When the environmental conditions and the number of organisms stay fairly constant over time, we call it a stable community.

In a healthy pond, the populations of each species remain balanced. There's just enough food, oxygen and shelter to support them all. Change happens slowly, if at all.

It's this balance that makes the pond a stable and thriving ecosystem that supports the local community!