Biology · Revision

Ecology Revision Notes

How organisms depend on each other and on their environment, how to sample them, and what humans change.

Key words

Word	Meaning
Habitat	The place where an organism lives
Population	All the organisms of one species in an area
Community	All the populations in an area
Ecosystem	A community and the non-living parts of its environment
Biodiversity	The variety of species in an area

Factors affecting a community

Abiotic: non-living	Biotic: living
light, temperature, water, soil pH and minerals, wind, CO_2 and O_2 levels	food availability, predators, pathogens, competition

Animals compete for food, territory and mates. Plants compete for light, space, water and minerals.

Food chains

grass → rabbit → fox

This shows a **producer**, a **primary consumer** and a **secondary consumer**. Arrows show the direction of energy transfer. Producers make their food by photosynthesis, so nearly all food chains begin with them.

If foxes decrease, rabbits usually increase and grass then decreases. Predator and prey numbers rise and fall in cycles.

> **Common slip:** the arrow means "is eaten by", so it points towards the animal doing the eating.

Pyramids and energy

- A pyramid of biomass shows the mass of living material at each level.
- Usually only about 10% of the energy passes to the next level.
- The rest is lost through respiration, movement, waste and parts that aren't eaten.
- This is why food chains rarely have more than a few levels.

Sampling with quadrats

A student places 10 quadrats (each 1 m^2) at random in a 200 m^2 field and counts 30 daisies in total.

30 ÷ 10 = 3 per m^2
Find the mean per quadrat.

3 × 200 = 600
Estimate the total for the field.

Place quadrats randomly to avoid bias. Use a **transect** line to see how a species changes across an area.

Cycles

Carbon moves into the air by	Carbon leaves the air by
respiration, combustion, decomposition	photosynthesis

Water cycle: evaporation and transpiration → condensation → precipitation → run-off and collection.

Decomposers (bacteria and fungi) break down dead material and return minerals to the soil.

Adaptations

Type	Example
Structural	Thick fur and small ears on an Arctic fox
Behavioural	Migrating or hibernating in winter
Functional	Concentrated urine in desert animals

Extremophiles live in extreme conditions, such as very high temperatures or salt levels.

Human impact

Problem	Effect
Deforestation	Less CO_2 absorbed, habitats and biodiversity lost
Burning fossil fuels	More CO_2, contributing to global warming
Pollution and waste	Harm to land, water and air, reducing biodiversity

Helpful measures: breeding programmes, restoring habitats, replanting hedgerows and forests, and recycling more.