

● ● ●
M E G A
L E C T U R E

Definitions and Concepts for AQA Biology GCSE

Topic 7: Ecology

*Definitions in **bold** are for higher tier only*

Definitions marked by '' are for separate sciences only*

Abiotic factors: The non-living aspects of an ecosystem e.g. temperature, light intensity, moisture, wind direction, wind intensity, soil pH, soil mineral content, carbon dioxide levels and oxygen levels.

Adaptation: A feature of an organism that increases its chance of survival in its environment. Such features may be behavioural, structural or functional.

***Anaerobic decay:** Decomposition in the absence of oxygen (commonly occurring in waterlogged soils) that produces carbon dioxide and methane gas.

***Apex predator:** A carnivore at the top of the food chain with no predators.

Biodiversity: The variety of living organisms in an ecosystem.

***Biogas:** A type of biofuel (methane gas) produced by anaerobic decay in biogas generators.

Biotic factors: The living components of an ecosystem e.g. food availability, pathogens, predators and other species.

Carbon cycle: The cycle through which carbon (in the form of carbon dioxide) moves between living organisms and the environment, involving respiration, photosynthesis and combustion.

Community: All of the populations of different species living together in a habitat.

Competition: When different organisms compete for the same resources (e.g. light, water, mates, territory) in an ecosystem. This limits population sizes and stimulates evolutionary change.

***Compost:** Dead and decaying organic matter, commonly used as a fertiliser.

***Decomposers:** Organisms that release enzymes which catalyse the breakdown of dead plant and animal material into simpler organic matter.

● ● ●
M E G A
L E C T U R E

***Decomposition:** The breakdown of dead materials into simpler organic matter. The rate of decomposition is affected by temperature, water and oxygen availability.

Deforestation: The removal of trees from land which is subsequently used to grow crops or provide space for cattle.

***Distribution:** The spread of living organisms in an ecosystem. It is affected by environmental changes which may be seasonal, geographic or man-made.

Ecosystem: The community of organisms (biotic) and non-living (abiotic) components of an area and their interactions.

Efficiency of biomass transfer: The efficiency of biomass transfer between trophic levels is calculated using:

$$\text{efficiency} = \frac{\text{biomass available after transfer}}{\text{biomass available before transfer}} \times 100$$

Extremophiles: Organisms that can live in extreme environments e.g. high temperatures, high salinity.

Food chain: Describes the feeding relationships between organisms and the resultant stages of biomass transfer. It takes the form:

producer → primary consumer → secondary consumer → tertiary consumer

***Food security:** Ensuring that populations have access to adequate amounts of safe and nutritious food.

Global warming: The gradual rise in the average temperature of the Earth due to increasing atmospheric levels of carbon dioxide and methane gas.

***GM crops:** Crops that have had their genomes modified by the insertion of a desired gene from another organism.

Interdependence: The dependence of different organisms on each other for survival e.g. plants depend on pollinators, herbivores depend on plants.

Mean: The average of a set of numbers calculated by dividing the sum of the values by the number of values.

Median: The middle number in a list of values ordered from lowest to highest.

Microorganisms: Very small organisms involved in the recycling of materials in an ecosystem. They return mineral ions to the soil and convert carbon to carbon dioxide which is released into the atmosphere.

● ● ●
M E G A
L E C T U R E

Mode: The number that occurs most commonly in a set of data values.

***Mycoprotein:** A food high in protein (suitable for vegetarians) that is produced by the microorganism, *Fusarium*, in fermentation vats.

Peatlands: Areas of peat soil in wetland habitats formed by the accumulation of partially decayed organic matter. Peat is commonly used as a garden compost.

Pollution: Contamination or destruction of the natural environment due to human intervention.

Population: All organisms of the same species living with one another in a habitat.

Predators: Consumers that prey on and eat other animals.

Prey: Animals that are eaten by predators.

***Primary consumers:** Herbivores that consume producers at trophic level 2 of a food chain.

Producers: Photosynthetic organisms (e.g. green plant or alga) at the start of the food chain that provide biomass for all living things.

***Pyramid of biomass:** A table of the dry mass of living material at each trophic level of a food chain. This forms the shape of a pyramid.

Quadrat: A square grid of known area used in sampling to determine the abundance and distribution of organisms in an ecosystem.

***Secondary consumers:** Carnivores that consume herbivores at trophic level 3 of a food chain.

***Sustainable:** The ability to maintain something for future generations.

***Sustainable fisheries:** Methods of harvesting fish at a sustainable rate and increasing fish stocks, for example, by controlling net size or introducing fishing quotas.

***Tertiary consumers:** Carnivores that consume other carnivores at trophic levels 4 and above of a food chain.

Transect: A line along an area used in sampling to determine the abundance and distribution of organisms in an ecosystem.

***Trophic level:** The position of an organism in a food chain.

Water cycle: The cycle through which water moves between living organisms and the environment, involving evaporation, transpiration, condensation and precipitation.