

## Definitions and Concepts for CAIE Biology IGCSE

### Topic 19: Organisms and Their Environment

---

*Definitions in **bold** are for supplement only*

**Biomass** - The total mass of organic material measured in a specific area over a set period.

**Carbon cycle** - The cycle through which carbon (in the form of carbon dioxide) moves between living organisms and the environment. It involves respiration, photosynthesis, feeding, combustion, decomposition and fossilisation.

**Carnivore** - An animal that feeds on other animals.

**Combustion** - The scientific term for the burning of a substance.

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

**Condensation** - A process in the water cycle in which water vapour in the air cools and condenses into water droplets, forming clouds.

**Consumers** - Organisms that feed on other organisms to obtain energy.

**Deamination** - A process that occurs in the liver in which the amino group is removed from amino acids to produce ammonia, later converted to urea.

**Death phase** - A period of population reduction in which the mortality rate is greater than the reproduction rate.

**Decomposers** - Organisms that obtain energy via the breakdown of dead plant and animal material into simpler organic matter.

**Decomposition** - The breakdown of dead materials into simpler organic matter.

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

**Denitrification** - The conversion of nitrate ions to nitrogen gas by denitrifying bacteria.

**Denitrifying bacteria** - Microorganisms responsible for the conversion of nitrate ions to nitrogen gas.

**Ecosystem** - The community of organisms and non-living components of an area and their interactions.

**Evaporation** - The process by which water is transformed from a liquid into a gas.

This work by [PMT Education](https://www.pmt.education) is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)



**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 web** - A diagram showing the interactions of different food chains.

**Fossil** - The remains of dead organisms found in rocks which are millions of years old.

**Fossil fuel** - A fuel (e.g. coal, oil, natural gas) formed from the compression of carbon-containing plant or animal remains over millions of years.

**Fossilisation** - The process by which a fossil is formed.

**Herbivore** - An animal that feeds on plants.

**Ingestion** - The process by which organisms take food and drink into their bodies through the mouth. In a food chain, energy is transferred between organisms by ingestion.

**Lag phase** - A period of slow population growth.

**Light energy** - The main source of energy input to biological systems that is harnessed from the sun. **Light energy is trapped by photosynthetic organisms and converted to chemical energy.**

**Log phase** - A period of rapid population growth, characterised by the birth rate exceeding the death rate. Also known as the exponential phase.

**Nitrification** - The conversion of ammonium ions to nitrate ions by nitrifying bacteria. This takes place in two stages: ammonium ions are oxidised to nitrite ions; nitrite ions are oxidised to nitrate ions.

**Nitrifying bacteria** - Microorganisms found in the soil responsible for the conversion of ammonium ions into nitrite and then nitrate ions.

**Nitrogen cycle** - The cycle through which nitrogen moves between living organisms and the environment, involving four types of bacteria: decomposers, nitrifying bacteria, nitrogen-fixing bacteria and denitrifying bacteria.

**Nitrogen fixation** - The conversion of atmospheric nitrogen gas into ammonia by nitrogen-fixing bacteria in the soil or root nodules of legumes. It can also occur via lightning.

**Nitrogen-fixing bacteria** - Microorganisms responsible for the conversion of atmospheric nitrogen gas into nitrogen-containing compounds. They can be free-living or mutualistic.

**Over-harvesting** - The harvesting of a species (for food, materials etc.) resulting in a reduction in population numbers. This may lead to the species becoming endangered or extinct.



**Photosynthesis** - A reaction that takes place inside photosynthetic organisms (e.g. plants, algae) and manufactures carbohydrates from raw materials using light energy.

**Population** - All organisms of the same species living with one another in a particular habitat, at the same time.

**Population growth curve** - A graphical representation of changing population numbers over time. The curve of a growing population in an environment with limited resources has a sigmoidal shape.

**Precipitation** - A process in the water cycle in which water is released from clouds as rain or snow.

**Predators** - Consumers that prey on and eat other animals.

**Prey** - Animals that are eaten by predators.

**Primary consumers** - Herbivores at trophic level two of a food chain that consume producers.

**Producers** - Photosynthetic organisms (e.g. green plants or algae) 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.

**Pyramid of numbers** - A diagram that shows the number of individual organisms at each trophic level of a food chain.

**Quaternary consumers** - Carnivores that are at the top of a food chain.

**Respiration** - A chemical reaction that takes place in cells and produces energy from nutrient molecules.

**Secondary consumers** - Carnivores at trophic level three of a food chain that consume herbivores.

**Stationary phase** - A period of stability in which population numbers generally remain constant.

**Tertiary consumers** - Carnivores at trophic level four of a food chain that consume other carnivores.

**Transpiration** - Water loss from plant leaves and shoots via diffusion and evaporation.

**Trophic level** - The position that an organism holds in a food chain, food web, pyramid of numbers or pyramid of biomass.

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

