AQA B7a – Ecology: Adaptations TRIPLE BIOLOGY

Key word	Definition
Environment	The biotic and abiotic conditions that surround an organism
Habitat	The place where organisms live
Population	Individuals of one species that live in a particular habitat
Community	Populations of different species that live in a particular habitat
Ecology	The study of living things in their environment
Ecosystem	The interaction of a community of organisms (biotic) with the non-living (abiotic) parts of their environment
Organism	An individual living thing
Adaptations	Features that allow organisms to survive in the conditions in which they normally live

Examples of biotic and abiotic factors

Abiotic – non-living factors that affect a community	**Biotic** – living factors that affect a community
• Temperature • Light intensity • Moisture levels • Soil pH • Wind intensity and direction • Carbon dioxide levels for a plant • Oxygen levels for aquatic animals	• Availability of food • Predation • New pathogens • Competition – one species outcompetes another

RP9 : Measure the population size of a common species in a habitat. Investigate the effect of a factor on the distribution of this species using sampling techniques.	***Biology only* RP10 : Investigate the effect of temperature on the rate of decay of fresh milk by measuring pH change.**
Transects and **quadrats** are used by ecologists to determine the distribution and abundance of species in an ecosystem **Quadrats** – Organisms are counted within a randomly placed square **Transect** – Organisms are counted along a line It is important to use **random** co-ordinates for your quadrat to get a completely random sample.	Factors that affect the rate of decay of biological material are water, temperature and availability of oxygen When lipase is added the fat in the milk is broken down into fatty acids making the pH of the solution lower. Phenolphthalein is an indicator that is pink in alkaline solutions of about pH 10. When the Ph drops below pH 8.3 phenolphthalein becomes colourless.

Biology only

- *Farmers optimise conditions for rapid decay of waste biological material for making compost as a natural fertiliser*
- *Anaerobic decay produces methane gas.*
- *Biogas generators can be used to produce methane gas as a fuel*

Types of adaptations

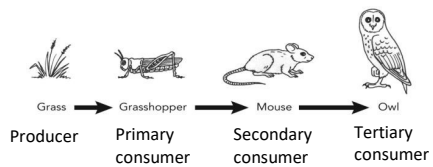
	Structural	Behavioural	Functional
Definition	Features of an organism's body e.g. shape, colour	The way an organism behaves e.g. migration, hibernation	Things happening inside an organism e.g. reproduction, metabolic rate
Examples	Polar bears live in the arctic so have white fur to camouflage against the snow	Many bears hibernate over the winter. This lowers their metabolism, reducing need for hunting for energy when there is least food.	Desert animals such as camels produce very little urine to conserve water in a very dry habitat

Extremophiles are organisms which live in very extreme environments such as high temperature, pressure or salt concentration. Examples are bacteria which live in deep sea vents.

Interdependence and competition

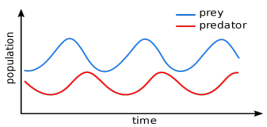
	Interdependence	Competition
Description	Species depend on each other in many ways: for food, pollination, seed dispersal.	Plants in a community or habitat compete with each other for many things: light, air, water, space and minerals Animals also compete; for food, mates and territory
Examples	Removing a species can affect the whole community. In the food chain below, if mice were removed from the habitat, the owl would have no food and their population would decrease.	Grey squirrels were introduced to the UK in the 1800s. This increased competition for food with the native red squirrels and the red squirrel population in the UK has decreased.

Photosynthetic organisms are the producers of biomass for life on earth.
Feeding relationships can be represented by food chains that all start with a producer



Consumers that kill and eat other animals are **predators**.
Consumers that are killed and eaten by other animals are **prey**.

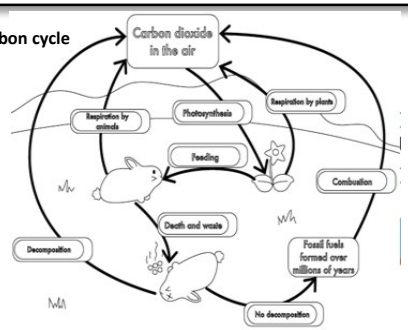
In a stable community, the number of predators and prey rise and fall in cycles



All materials in the living world are recycled to provide building blocks for future organisms

Microorganisms and detritivores cycle materials by returning carbon to the atmosphere as CO_2 and mineral ions to the soil.

The carbon cycle



The water cycle