



## Highsted Knowledge Organiser

### High Performance Learning

#### Year 11: Biology

##### What I need to know -Overview

Organisms live in ecosystems where they interact with both living (biotic) and non-living (abiotic) factors. Adaptations allow organisms to survive in specific environments.

Interdependence describes how organisms rely on each other for food, shelter, pollination and maintaining stable populations. Ecosystems include feeding relationships, cycling of materials, and the impact of humans on the environment. Changes to one part of an ecosystem can have wide-ranging effects

##### Key Vocabulary (with definitions)

- **Adaptation** – A feature that helps an organism survive and reproduce in its environment.
- **Structural adaptation** – A physical feature that aids survival.
- **Behavioural adaptation** – The way an organism acts to increase survival.
- **Functional adaptation** – Internal processes that help survival.
- **Interdependence** – How organisms depend on each other within an ecosystem.
- **Ecosystem** – A community of organisms interacting with their environment.
- **Biotic factor** – A living factor that affects organisms.
- **Abiotic factor** – A non-living factor that affects organisms.
- **Population** – All organisms of one species in a habitat.
- **Community** – All the populations of different species in a habitat.
- **Food chain** – A diagram showing energy transfer between organisms.
- **Food web** – A network of interconnected food chains.
- **Trophic level** – The position of an organism in a food chain.
- **Pyramid of biomass** – A diagram showing the mass of organisms at each trophic level.

- **Competition** – When organisms compete for resources.
- **Decomposer** – An organism that breaks down dead material.

Knowledge

### Adaptations

- Organisms are adapted to survive in specific environments.
- Structural adaptations include thick fur, sharp teeth or broad leaves.
- Behavioural adaptations include migration or nocturnal activity.
- Functional adaptations include antifreeze proteins or venom production.
- Adaptations increase the chances of survival and reproduction.

### Interdependence and Competition

- Organisms depend on others for food, shelter, pollination and seed dispersal.
- Plants compete for light, water, space and mineral ions.
- Animals compete for food, mates and territory.
- Competition can limit population size.

### Feeding Relationships

- All food chains start with a producer.
- Energy is transferred between trophic levels.
- Only a small percentage of energy is transferred to the next level.
- Pyramids of biomass are always pyramid-shaped.

### Decomposition and Nutrient Cycling

- Decomposers break down dead organisms and waste.
- This releases nutrients back into the soil.
- Nutrients are reused by plants to make new biomass.
- Decomposition is faster in warm, moist, oxygen-rich conditions.

### Abiotic and Biotic Factors

- Abiotic factors include temperature, light intensity, moisture and soil pH.
- Biotic factors include predators, pathogens and competition.
- Changes in factors can affect the distribution and abundance of organisms.

### Human Impacts on Ecosystems

- Humans can reduce biodiversity through pollution, deforestation and overfishing.
- Farming practices can affect ecosystems.
- Conservation methods include breeding programmes, habitat protection and recycling.

Key Assessment Information

- Identify and describe different types of adaptation.
- Explain interdependence using food webs and competition.
- Interpret pyramids of biomass.
- Explain how changes in abiotic factors affect organisms.
- Describe the role of decomposers in ecosystems.
- Evaluate human impacts and conservation strategies.
- Apply knowledge to unfamiliar GCSE-style questions.