# Year 11 Biology 7: Ecology Knowledge Organiser

| 1. Keywords | |
|---|---|
| Ecosystem | The interaction of a community of living organisms with their environment |
| Biotic | Living factors |
| Abiotic | Non-living factors |
| Interdependence | Different species rely on each other for survival within an ecosystem |
| Adaptations | Features that help an organism survive in a particular habitat |
| Habitat | Natural environment of a particular organism |
| Competition | The process by which organisms try to gain raw materials over each other.<br>Plants compete for space, light water and mineral ions<br>Animals compete for shelter, food, water and mates |
| Biodiversity | The variety of all the living organisms within the earth or ecosystem. A good thing |

| 2. Biotic and abiotic factors | |
|---|---|
| Biotic factors | Abiotic factors |
| •availability of food •new predators arriving •new pathogens •one species outcompeting another so the numbers are no longer sufficient to breed. | •light intensity •Temperature •moisture levels •soil pH and mineral content •wind intensity and direction •carbon dioxide levels for plants •oxygen levels for aquatic animals |

| 3. Levels of organisation | |
|---|---|
| Producer | An organism that makes its own food by photosynthesis. They are the starting point of all food chains |
| Consumer | Organism that eats something |
| Predator | Consumer that hunts |
| Prey | Consumer that is hunted |
| Transect | Sampling method which samples at regular spaces along a strip to measure the variation of a species |
| Quadrat | Sampling technique where a metal square is placed randomly in an area to determine an estimate of the population of a species |
| Mean | Average. Add up the values and divide by the number of results used |
| Mode | The most common value |
| Median | The value that is half the range of results |

| 8. Waste management | |
|---|---|
| Pollution type | Examples |
| Water | Sewage |
| | Fertilisers |
| | Toxic chemicals |
| Air | Smoke |
| | Acidic gases ($SO_2$) |
| Land | Landfill |
| | Toxic chemicals |

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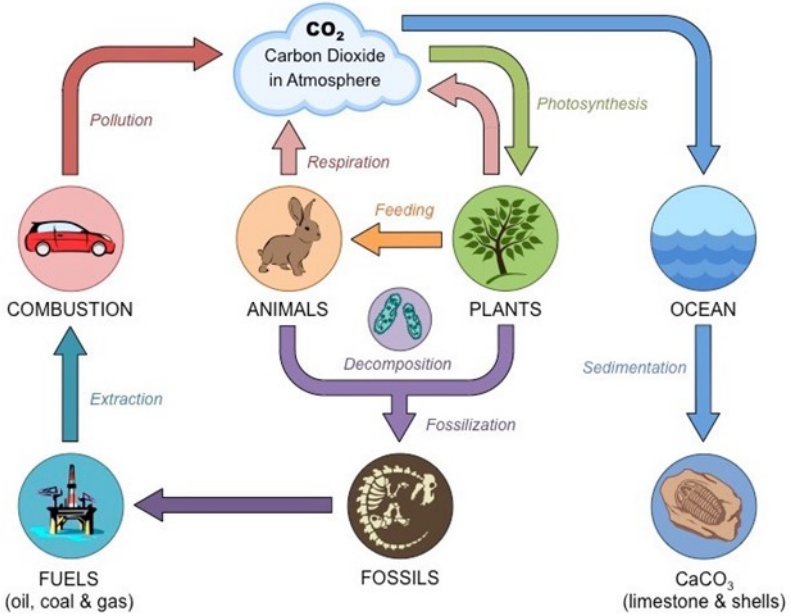
## 8. The Carbon Cycle




## 9. Impact of pollution

| | |
|---|---|
| Destruction of peat bogs | Reduction in biodiversity<br>Burning the peat releases carbon dioxide |
| Deforestation to make room for agriculture and biofuels | Reduction in biodiversity<br>Reduces ability to absorb carbon dioxide |
| Global warming | Extreme weather<br>Famine |

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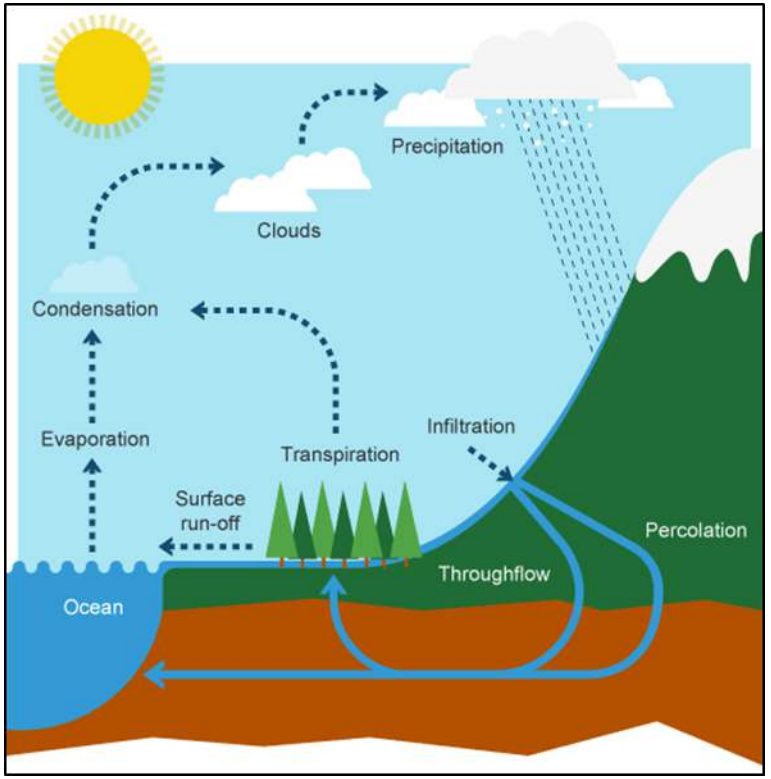
## 8. The Water Cycle



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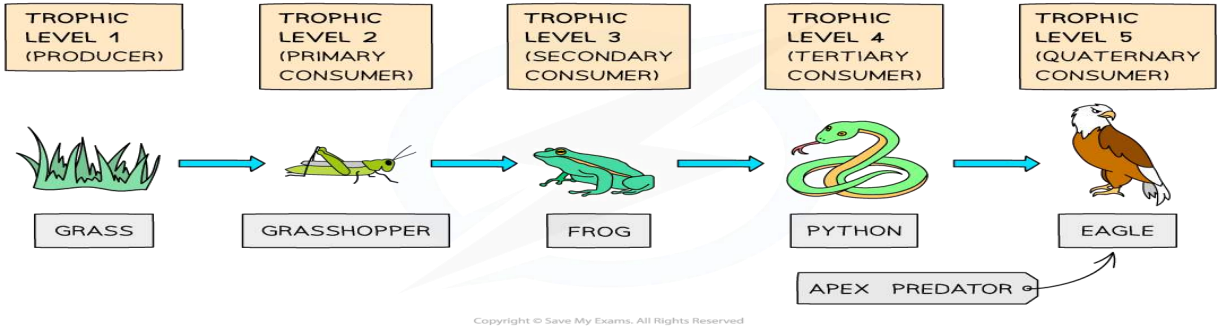
| 6. Decomposition (TRIPLE ONLY) | |
|---|---|
| Decomposers | Microorganisms which respire on dead matter breaking it down to be recycled |
| Decomposition (decay) | The breaking down of dead matter so nutrients can be recycled |
| Compost | A natural fertiliser made from decomposed plants |





| 7. Factors that affect the rate of decomposition (TRIPLE ONLY) | | |
|---|---|---|
| Factor | Value | Reason |
| Temperature | 35-40°C | Too cold, rates slow. Too hot enzymes denature |
| Oxygen | As much as possible | Decomposers work faster when they respire aerobically. If they respire anaerobically they produce biogas, which can be useful |
| Water | As much as possible | Decomposers need water to help digest their food |

| 11. Trophic levels (TRIPLE ONLY) | | |
|---|---|---|
| 1 | producers | Plants and algae |
| 2 | Primary consumers | Herbivores |
| 3 | Secondary consumers | Carnivores/ Predators |
| 4 | Tertiary consumers | Top carnivore/ apex predator |
| Energy loss between trophic levels | | Only 10% of biomass makes it up each trophic level. It is wasted by •Respiration of glucose •Wasted being produced and excreted |

| 12. Food security (TRIPLE ONLY) | |
|---|---|
| Food security | Having enough food for your population |
| Biological factors which affect food security: | •Increased birth rate •Changing diet habits •New pests and pathogens •Drought •Rising |

| 13. Food production (TRIPLE ONLY) | |
|---|---|
| Factory farming | Increasing food production by restricting the movement of animals and heating their cages |
| Sustainable fishing | Using fish quotas to prevent over fishing and the extinction of fish stocks |
| Fusarium | A fungus that makes mycoprotein and vegetarian protein source. |
| GM bacteria | Produce human insulin for medical use. |