Year 11 – Paper 2 - Biology Knowledge Organiser – Ecology

Key terms	
Ecosystem	The interaction of a community of living organisms (biotic) with the non-living (abiotic) parts of their environment.
Habitat	The area in which an organism lives.
Population	The total number of organisms of one species in an ecosystem.
Competition	Plants often compete for light, space, water and mineral ions. Animals often compete for food, mates and territory
Interdependence	Within a community each species depends on other species for food, shelter, pollination etc.
Adaptations	A feature that an organism has that allows it to survive in its ecosystem.
Biodiversity	The variety of all the different species of organisms on Earth, or within an ecosystem.

Measuring biodiversity

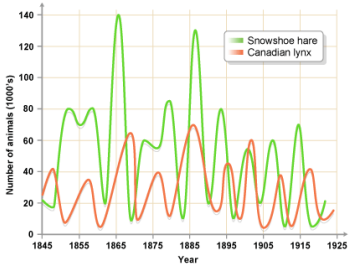
	Random Sampling	Systematic Sampling (transect)
Purpose	Estimate the size of a population in an area.	See how populations and communities change over a distance.
Method	Choose a suitable number of quadrats to use. Assign co-ordinates to the area that you are sampling. Randomly choose co-ordinates. Place the quadrats and count organisms present. Calculate the mean number of organisms.	Use a tape measure to create a long line (transect). Put quadrats at set distances. Count organisms present. Repeat in a different place/ different time of year. Draw graphs to see how communities change over a distance.

The water cycle

This is how water gets recycled through the environment. It has 3 key steps
Evaporation – liquid turning to water vapour in the atmosphere.
Condensation – water vapour turns into a cloud
Precipitation – water is deposited from clouds as rain.

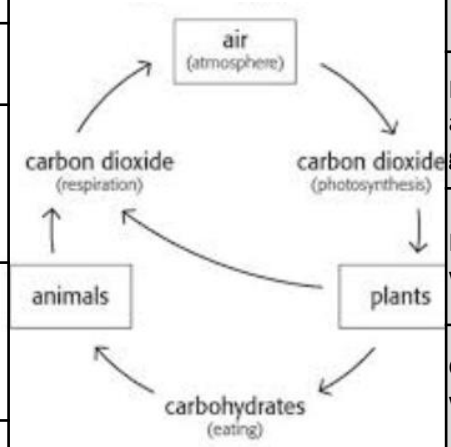
Predator – Prey relationships

The population of the **prey increases**
More food is available for the **predators**, so their population increases.
There are **more predators** so the **population of the prey decreases**.
There is **less prey to feed on** so the population of **predators decreases.**



Carbon cycle steps

Photosynthesis	Plants absorb CO_2 from atmosphere.
Respiration	Animals, plants and micro-organisms respire, releasing CO_2 into the atmosphere.
Decay	The carbon in dead organisms is released to the atmosphere by micro-organisms respiring.
Combustion	Carbon locked in fossil fuels is released as CO_2 when fuels are burned.



Human effects on biodiversity

Human activity	Why it happens	Effects
Polluting water	Farmers spread fertiliser on fields. Rain washes fertiliser into rivers and ponds.	Fertilisers and sewage cause an increase in growth of algae. Other animals die due to a lack of oxygen.
Deforestation	To provide land for cattle and rice fields. To grow crops for biofuels.	Burning or decomposing trees releases CO_2. Fewer trees to remove CO_2 from the atmosphere. Loss of biodiversity.
Producing acidic gases	Combustion of fossil fuels releases carbon dioxide, sulphur dioxide and nitrogen oxides. These gases dissolve in water making it acidic.	Acid rain. Damages plants. Can cause rivers and lakes to become acidic, killing animals and plants.
Polluting water	Pesticides and other toxic chemicals (e.g. from landfill) are washed into rivers and lakes by rain.	Toxic chemicals accumulate in animals. The further up the food chain, the greater the accumulation. Top predators die or fail to breed.
Global warming	Humans release extra greenhouse gases into the atmosphere. Greenhouse gases absorb heat and stop it escaping to space.	Loss of habitat as sea levels rise; animals and plants can no longer survive in certain areas.