

Biology 7: Ecology

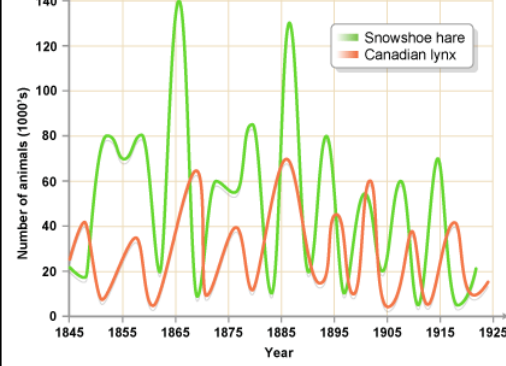
Section 1: Key terms

1 Ecosystem	The interaction of a community of living organisms (biotic) with the non-living (abiotic) parts of their environment.
2 Habitat	The area in which an organism lives .
3 Community	Two or more different species in an ecosystem. A stable community is one where all the species and environmental factors are in balance so that population sizes remain fairly constant .
4 Population	The total number of organisms of one species in an ecosystem.
5 Competition	Plants often compete for light, space, water and mineral ions . Animals often compete for food, mates and territory
6 Interdependence	Within a community each species depends on other species for food, shelter, pollination etc.
7 Adaptations	A feature that an organism has that allows it to survive in its ecosystem.
8 Biodiversity	The variety of all the different species of organisms on Earth, or within an ecosystem .

Section 3: Food Chains and Predator-Prey Relationships



- 11 Producer** – Start of a food chain. Produces **glucose** through **photosynthesis**.
- 12 Primary Consumer** – Eats a **producer**. **Prey** of secondary consumer.
- 13 Secondary Consumer** – Eats a **primary consumer**. **Predator** of primary consumer.
- 14 Tertiary Consumer** – **Predates** on **secondary consumer**.



Predator-prey cycles
 15 The population of the **prey increases**
 16 **More food** is available for the **predators**, so their population increases.
 17 There are **more predators** so the **population of the prey decreases**.
 18 There is **less prey to feed on** so the population of **predators decreases**.
 19 The **cycle restarts** from the beginning.

Section 2: Biotic and Abiotic Factors

9 Biotic	10 Abiotic
Availability of food	Light intensity
New predators arriving	Temperature
New pathogens	Moisture levels
One species outcompeting another	Oxygen levels for aquatic animals
	Wind intensity and direction
	Carbon dioxide levels for plants
	Soil pH and mineral content

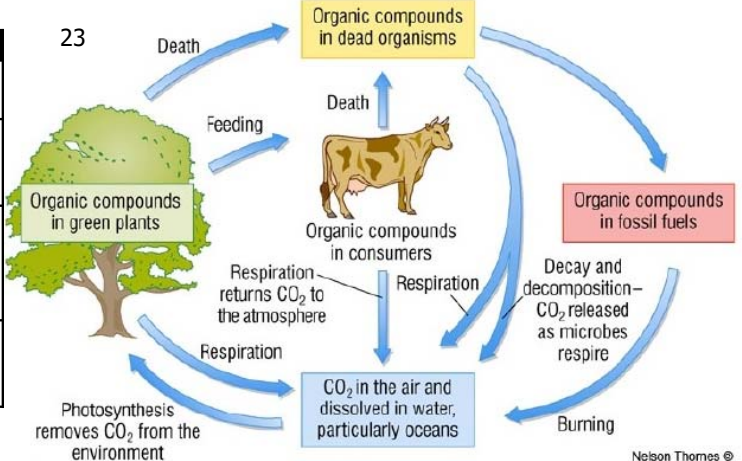
Section 4: Adaptations

20 Structural Adaptations	Part of the body that helps the organism survive. e.g. polar bears have a thick layer of fat for insulation.
21 Functional Adaptations	How the body operates that helps the organism survive. E.g. camels do not sweat.
22 Behavioural Adaptations	A behaviour that helps the organism survive. e.g. desert rats stay in their burrows during the hottest parts of the day.

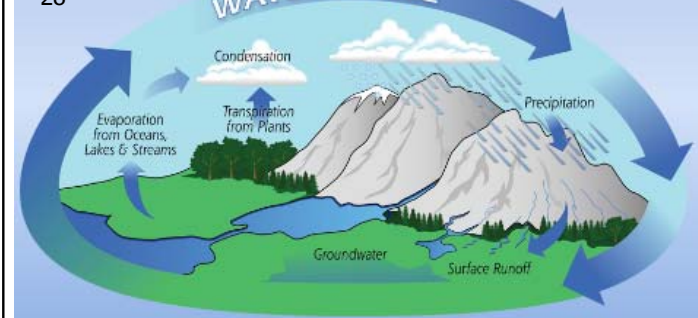
Section 5: Cycles

Section 5a: Carbon cycle steps

24 Photosynthesis	Plants absorb CO₂ from atmosphere.
25 Respiration	Animals, plants and micro-organisms respire, releasing CO₂ into the atmosphere.
26 Decay	The carbon in dead organisms is released to the atmosphere by micro-organisms respiring .
27 Combustion	Carbon locked in fossil fuels is released as CO ₂ when fuels are burned .



Section 5b: Water cycle steps



29 Evaporation	Liquid water is turned into water vapour in the atmosphere .
30 Condensation	Water vapour condenses to form clouds .
31 Precipitation	Water is deposited from clouds as rain .

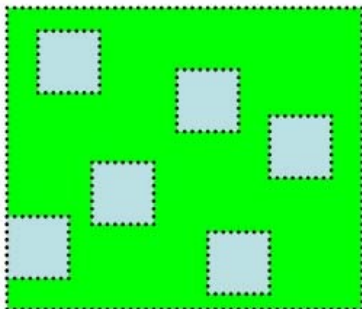
Biology 7: Ecology

Section 6: Human effects on biodiversity

Human activity	Why it happens	Effects
32 Polluting water with fertiliser and sewage	Farmers spread fertiliser on fields. Rain washes fertiliser into rivers and ponds. Sewage is released directly into rivers.	Fertilisers and sewage cause an increase in growth of algae . When the algae die , they are decomposed by bacteria that use oxygen . Other animals die due to a lack of oxygen .
33 Using land	Humans construct buildings , create quarries and farm .	Habitat for plants and animals is reduced .
34 Destroying peat bogs	Humans use peat to provide compost to increase food production.	Removes habitat, reducing biodiversity . Decay or burning of peat produces CO₂ .
35 Deforestation	To provide land for cattle and rice fields . To grow crops for biofuels .	Burning or decomposing trees releases CO₂ . Fewer trees to remove CO₂ from the atmosphere . Loss of biodiversity .
36 Producing acidic gases	Combustion of fossil fuels releases carbon dioxide, sulfur 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.
37 Polluting water with toxic chemicals	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.
38 Increasing temperature of the planet (global warming)	Humans release extra greenhouse gases (CO₂ and methane) into the atmosphere and less CO₂ is absorbed by plants through photosynthesis. 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; reduced biodiversity ; change in migration patterns of animals.

Section 7: Maintaining biodiversity

39 Breeding programmes for endangered species.
40 Protection and regeneration of rare habitats.
41 Reintroduction of field margins and hedgerows in agricultural areas where farmers grow only one type of crop
42 Reduction of deforestation
43 Reduction of carbon dioxide emissions by some governments
44 Recycling resources rather than dumping waste in landfill.



Section 8: Measuring biodiversity

	Random Sampling	Systematic Sampling (transect)
45 Purpose	Estimate the size of a population in an area.	See how populations and communities change over a distance .
46 Method	<ol style="list-style-type: none"> 1. Choose a suitable number of quadrats to use. 2. Assign co-ordinates to the area that you are sampling. 3. Randomly choose co-ordinates. 4. Place the quadrats and count organisms present. 5. Calculate the mean number of organisms. 	<ol style="list-style-type: none"> 1. Use a tape measure to create a long line (transect). 2. Put quadrats at set distances. 3. Count organisms present. 4. Repeat in a different place/ different time of year. 5. Draw graphs to see how communities change over a distance.

