

Chapter 17: Organising an ecosystem

Knowledge organiser


Levels of organisation


Feeding relationships within a community can be represented by _____.


Photosynthetic organisms that synthesise molecules are the producers of all _____ for life on Earth, and so are the first step in all food chains.


A range of experimental methods using _____ and _____ are used by ecologists to determine the distributions and abundances of different _____ in an ecosystem.

Describe the levels of the foodchain using the images


grass


slug

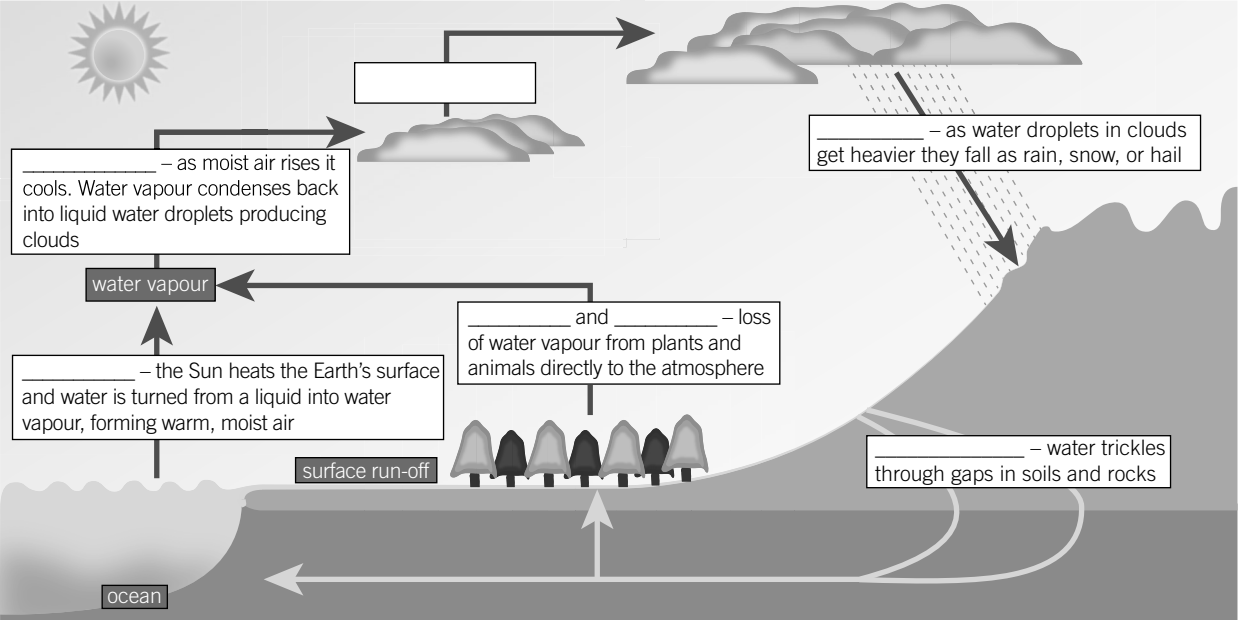

sparrow


hawk

Consumers that kill and eat other animals are _____, and those that are eaten are _____.
_____ predators are carnivores with no predators.

Organisms usually have more complex feeding relationships, with more than one predator or more than one food source. These can be shown in a _____.

The water cycle



_____ – as moist air rises it cools. Water vapour condenses back into liquid water droplets producing clouds

_____ – the Sun heats the Earth's surface and water is turned from a liquid into water vapour, forming warm, moist air

_____ and _____ – loss of water vapour from plants and animals directly to the atmosphere

_____ – as water droplets in clouds get heavier they fall as rain, snow, or hail

_____ – water trickles through gaps in soils and rocks

surface run-off

ocean

water vapour

Pyramids of biomass

The _____ of an organism is the number of steps it is from the start of its food chain.

Pyramids of biomass represent the relative amount of biomass at each trophic level of a food chain.

Biomass is the amount of _____ or _____ biological matter in an area. Biomass is _____ from each trophic level to the level above it in the food chain.

biomass of _____ (carnivore)

biomass of _____ (carnivore)

biomass of _____ (herbivore)

biomass of _____ (plant or alga)

trophic level 4

trophic level 3

trophic level 2

trophic level 1

Producers transfer about 1% of the incident _____ energy used for _____ to produce biomass.

Approximately _____ of the biomass from each trophic level is transferred to the level above it.

How materials are cycled

All materials in the living world are recycled, which provides the building materials for future organisms. Label the diagram.

organic compounds in green plants

organic compounds in dead organisms

organic compounds in consumers

CO₂ in the air and dissolved in water, particularly oceans

carbon compounds in fossil fuels

respiration returns CO₂ to the atmosphere

decay and decomposition – CO₂ released as microorganisms respire

The carbon cycle

This loss of biomass moving up the food chain is due to several factors:

Key terms

Make sure you can write a definition for these key terms.

biomass carbon cycle carnivore consumer decomposer evaporation fertiliser food chain food web herbivore precipitation predator prey producer trophic level water cycle

Decomposition

Decomposers, such as _____ and _____, break down dead plant and animal matter by secreting _____ into the environment. The small soluble food molecules produced then diffuse into the _____.

These materials are cycled through an _____ by decomposers returning _____ to the atmosphere as carbon dioxide and mineral ions to the soil.

carbon dioxide into _____ via photosynthesis

carbon dioxide into _____

mineral ions, e.g., nitrates into plant through roots

mineral ions, e.g., nitrates into soil

_____ break down dead bodies and waste materials

plant material _____ by consumers

Gardeners and farmers try to provide _____ conditions for the rapid decay of waste material by decomposers.

Decomposition will occur faster in _____ temperatures, when oxygen and moisture levels are _____, and there is a _____ pH.

The compost produced from this decay is then added to soil as a natural _____ for growing garden plants and crops.

When there is a lack of oxygen, waste is decomposed _____.

Anaerobic decay produces _____ gas. Biogas generators use anaerobic decay to produce methane for use as a _____.

Impacts of environmental change

Environmental changes affect the distribution of species in ecosystems.

These changes may be seasonal, geographic, or caused by humans, and include:

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Retrieval questions

Answer the following questions using the information from the knowledge organiser.

B17 questions		Answers
1	What is a producer?	
2	What is a food chain?	
3	What is a consumer?	
4	What is a herbivore?	
5	What is a predator?	
6	What is a prey organism?	
7	What is an apex predator?	
8	What proportion of biomass is transferred from each trophic level to the one above?	
9	Why is biomass lost between trophic levels?	<ul style="list-style-type: none">••••
10	What is the carbon cycle?	
11	What is the water cycle?	
12	What is a decomposer?	
13	What is the role of decomposition?	
14	What factors affect the rate of decay by decomposers?	
15	What gas does anaerobic decay produce?	
16	How can this gas be used?	
17	Give the environmental changes that can affect the distribution of organisms.	