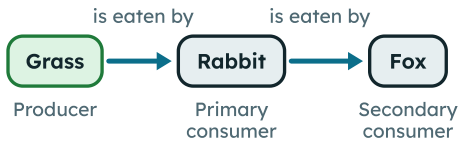
KS3 SCIENCE · BIOLOGY

Ecosystems revision sheet

Name _____

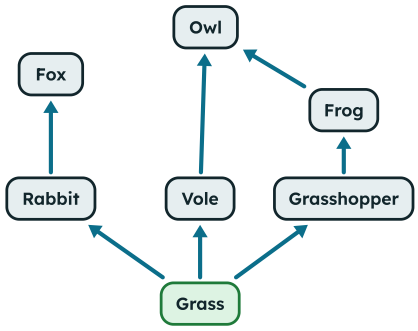
1. Food chains



Each arrow points from the food to the feeder

- A **food chain** shows what eats what. Read each arrow as **"is eaten by"**. It shows the way **energy is transferred**.
- A **producer** starts every chain. It is a green plant or an alga, which makes its own food by photosynthesis.
- **Consumers** eat other living things: the **primary consumer** eats the producer, the **secondary consumer** eats the primary consumer, and a **tertiary consumer** comes next.
- A **top predator** ends the chain. Nothing in its ecosystem hunts it.

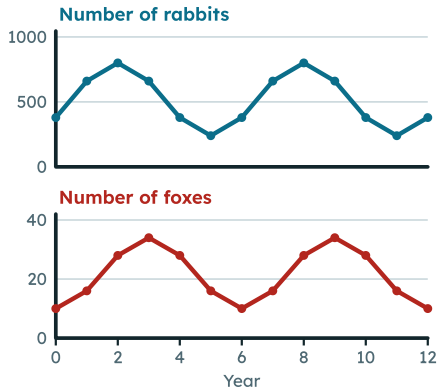
2. Food webs



Three chains that share the grass

- Most animals eat more than one thing, so food chains join up to make a **food web**.
- A **predator** hunts and eats other animals. The animals it eats are its **prey**. The frog is both.
- A **herbivore** eats only plants. A **carnivore** eats only other animals. An **omnivore** eats both.
- **Decomposers** (bacteria and fungi) break down dead plants, dead animals and waste. This puts nutrients back into the soil for producers to use.

3. Interdependence



A model: fox numbers follow rabbit numbers

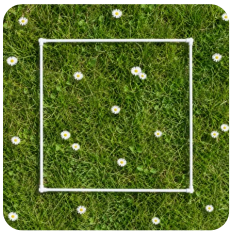
- The living things in a food web depend on each other. This is **interdependence**.
- A **population** is all the living things of one species in an area.
- Populations also change because of **disease**, **pollution** and **competition** for food, water, light and space.
- A new, **invasive** species can upset a web. Grey squirrels compete with red squirrels for food.

CHANGE	WHAT HAPPENS NEXT
More prey	More food for predators, so more predators survive
More predators	More prey are eaten, so prey numbers fall
Less prey	Predators go short of food, so their numbers fall



4. Pollinators and our food

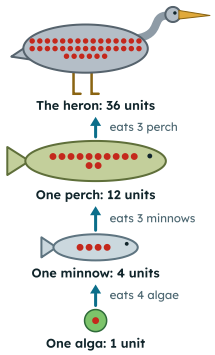
- Many crops only make fruit and seeds after **insects have pollinated** their flowers: apples, cherries, almonds, pumpkins and cocoa.
- Bees do most of this work. Hoverflies, butterflies, moths and beetles help.
- Wheat, rice and maize do not need insects. The wind spreads maize pollen, and wheat and rice mostly pollinate themselves.
- Many wild pollinators are in decline: there are fewer wild flowers, and some pesticides harm them.
- **Fewer pollinators → fewer flowers pollinated → fewer fruits and seeds → less food, at a higher price.**



5. Living things and their environment

- A **habitat** is the place where a living thing lives. A **community** is all the populations that share a habitat. An **ecosystem** is a community and its non-living environment: air, water and soil.
- **Living things change their surroundings.** A beaver's dam turns a stream into a pond. A tree shades the ground beneath it.
- **Conditions decide what can live where:** light, water and temperature. Few daisies grow in deep shade.
- **When conditions change, populations change.** A drought, a flood or pollution can make a population fall. If every member of a species dies, it is **extinct**.
- **Sampling with a quadrat:** place it at random several times, count each time, find the mean, then multiply by the area. A mean of 5 daisies in 1 m² gives about 500 in a 100 m² field.

6. Toxins in food chains



Each red dot is one unit of toxin

- Some toxic materials, such as certain pesticides and mercury, are taken in faster than the body can break them down or pass them out. They **build up in the body**. This is **bioaccumulation**.
- Each animal eats **many** of the living things below it in the chain, and takes in the toxin from every one of them.
- So the amount in each body gets bigger at every step of the chain.
- The **top predator** ends up with the highest level, so it is the most likely to be harmed. In the 1950s and 1960s the pesticide DDT built up in birds of prey. Their eggshells became thin and broke, and their numbers fell.
- In the drawing, a model in which no toxin leaves the body: 4 algae × 1 unit = 4 units in a minnow. 3 minnows × 4 = 12 units in a perch. 3 perch × 12 = 36 units in the heron.

Key words

Food chain: shows what eats what, in one line that starts with a producer
Producer: a green plant or alga that makes its own food
Primary consumer: the first consumer in a chain: it eats the producer
Predator: an animal that hunts and eats other animals
Herbivore: an animal that eats only plants
Decomposer: breaks down dead plants and animals, so nutrients are recycled
Population: all the living things of one species in an area
Ecosystem: the living things in an area and their non-living environment
Competition: a struggle for the same food, water, light or space

Food web: food chains from one ecosystem joined together
Consumer: an animal that eats plants or other animals
Secondary consumer: the second consumer in a chain: it eats the primary consumer
Prey: an animal that is hunted and eaten
Carnivore: an animal that eats only other animals
Habitat: the place where a living thing lives
Community: all the populations that share a habitat
Interdependence: living things in a food web relying on each other
Bioaccumulation: the build-up of a toxin inside living things

Pictures are illustrations made for this sheet, not real photographs.