

Ecosystems and Interdependence

Key words, a food web, photosynthesis and how organisms depend on each other.

Name _____ Date _____ Class _____

Learning objective: I can explain how organisms in an ecosystem depend on each other.

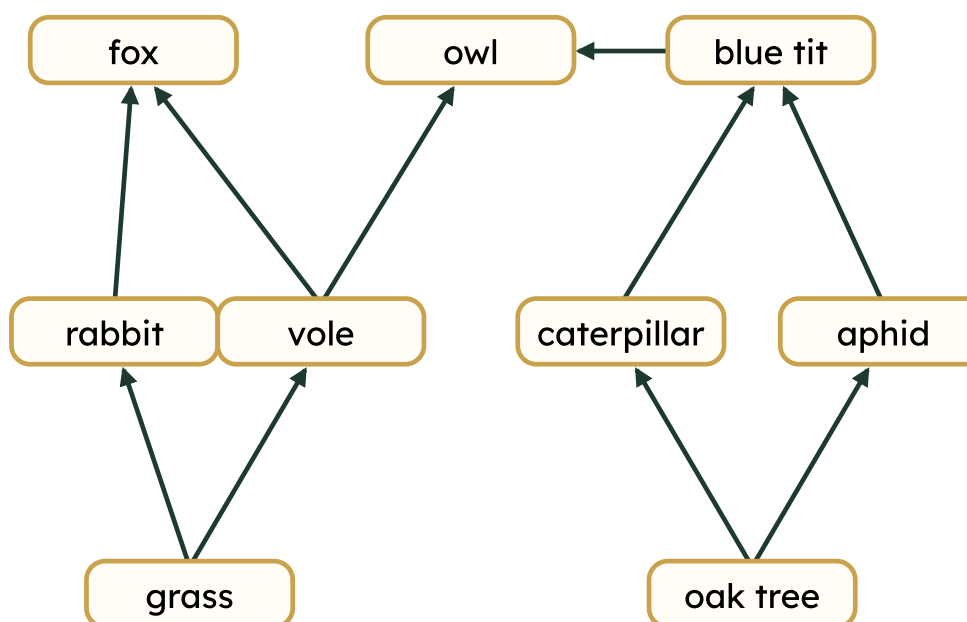
✓ I can read a food web ✓ I can predict effects of changes ✓ I can write the photosynthesis equation

1 Key words Match each word to its meaning.

1 habitat	☐	A the way organisms in an ecosystem depend on each other
2 population	☐	B an organism that makes its own food, usually by photosynthesis
3 community	☐	C all the organisms of one species living in an area
4 producer	☐	D the place where an organism lives
5 consumer	☐	E an animal that hunts and eats other animals
6 predator	☐	F all the populations of different species living in an area
7 interdependence	☐	G an organism that gets energy by eating other organisms

2 A woodland food web

The arrows show the direction energy is transferred (from the food to the feeder).



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3 Read the food web

1 Name the **two** producers. [1 mark]

2 Name **one** herbivore (primary consumer). [1 mark]

3 Write out one food chain with **four** organisms. [1 mark]

4 Think it through

4 A disease kills most of the voles. Suggest what happens to the number of owls, and explain why. [3 marks]

5 Suggest what happens to the grass if the rabbits and voles decrease. [2 marks]

5 Photosynthesis Complete the word equation and sentences.

Word bank:

chlorophyll

consumers

nitrogen

chloroplasts

water

producers

oxygen

1 carbon dioxide + _____ → glucose + _____ (using light energy)

2 Photosynthesis happens in the _____ of plant cells, which contain the green pigment _____.

3 Plants are called _____ because they make their own food.

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6 Pyramids and poisons

- 1 A pyramid of numbers for oak tree → caterpillar → blue tit has a very narrow bottom bar. Explain why. [2 marks]

- 2 A farmer sprays a pesticide that is not broken down in the body. Explain why owls could end up with the highest concentration. [3 marks]

7 True or false?

	TRUE	FALSE
1 Energy is passed on completely from one level of a food chain to the next.	☐	☐
2 Insects such as bees are needed to pollinate many crops.	☐	☐
3 A toxic chemical can build up in the bodies of top predators (bioaccumulation).	☐	☐
4 Removing one species from an ecosystem never affects any other species.	☐	☐

8 Explain

Explain why bees are important to humans and to other organisms in an ecosystem. [4 marks]

Answer Key

Ecosystems and Interdependence

Question	Answers
1 Key words	1 D ; 2 C ; 3 F ; 4 B ; 5 G ; 6 E ; 7 A
3 Read the food web	1. grass and oak tree 2. any one of: rabbit, vole, caterpillar, aphid 3. oak tree → caterpillar → blue tit → owl (or oak tree → aphid → blue tit → owl)
4 Think it through	4. Owls decrease (less food), or stay similar if they eat more blue tits instead – which could then reduce the blue tit population. 5. The grass increases because fewer animals are eating it.
5 Photosynthesis	1 water / oxygen; 2 chloroplasts / chlorophyll; 3 producers
6 Pyramids and poisons	1. There is only one (large) oak tree, but it supports many caterpillars, so the producer bar is smallest even though the tree holds the most biomass/energy. 2. The pesticide is passed along the food chain and builds up (accumulates) at each level because each animal eats many of the level below; owls are top predators, so they collect the most.
7 True or false?	1 False – energy is lost at each level, e.g. through movement and heat, so food chains are short; 2 True ; 3 True ; 4 False – food webs are interdependent, so a change in one population affects others
8 Explain	Look for: • Bees pollinate flowers, so plants make fruit and seeds • Many human food crops depend on pollination • Other animals depend on those plants (and on bees as food), so a fall in bees affects whole food webs

Teaching note: arrows in food chains and webs point from the organism being eaten to the organism that eats it, showing the direction of energy transfer. Accept any well-reasoned prediction in section 4.