Science: Interdependence and Photosynthesis

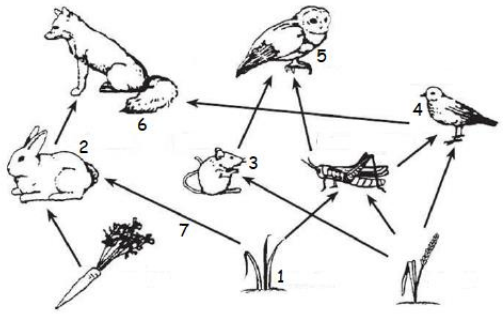
1. Key Words

Habitat	Area where an organism lives and obtains its food
Pesticide	Chemical used to kill insects and weeds that prevent the growth of a crop
Carnivore	Animal that only eats other animals (meat)
Producer	A green plant or algae that makes its own food using sunlight
Consumer	An organism that eats other organisms
Herbivore	Animal that only eats plants
Bioaccumulation	Build up of toxins in a food chain

2. Food webs

A food web shows the relationship between many food chains

1	**Producer** – the grass carries out photosynthesis
2	**Primary consumer** – the rabbit eats the grass
3	**Herbivore** – the mouse eats the wheat which is a plant
4	**Omnivore –** the sparrow eats both the grasshopper and the wheat
5	**Secondary consumer** – the owl is the second consumer in the chain
6	**Tertiary consumer –** in the food chain with the wheat, grasshopper, sparrow and fox, the fox is the 3rd consumer



3. Pyramid of numbers

	Numbers	Biomass	Energy
Sparrowhawk Bluetit Caterpillar Oak Tree	This pyramid shows how many organisms are in each stage of the food chain	This pyramid shows how much living matter is at each stage of the food chain	This pyramid shows how much energy there is at each stage of the food chain

4. Competition

Plants	Animals
Light	Food
Space	Territory
Water	Water
Mineral ions	Dominance
	Mates

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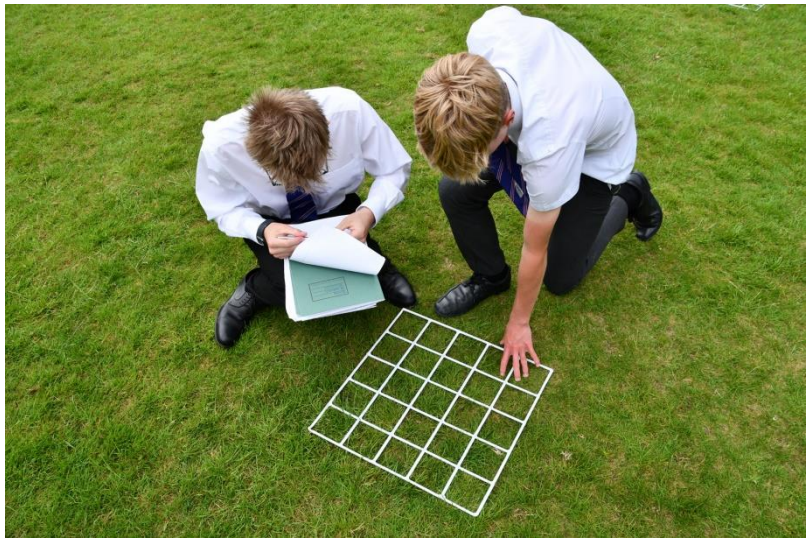
5. Sampling a habitat

Random sampling: An estimated population of an organism can be determined using a random sampling technique.



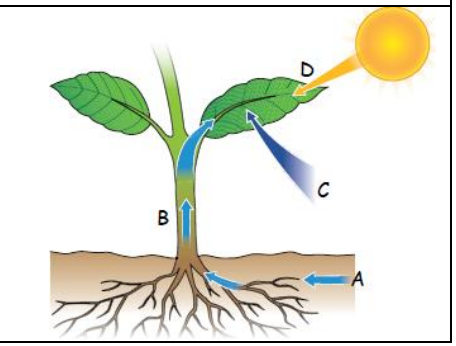
A 0.25m^2 is placed randomly in the sample area.
The number of a species in this area is counted.
This is repeated 1 – 20 times across the sample area.
The number of the species in each 1m^2 is calculated.
This is then multiplied by the area of the sample area to give an estimated population number.

6. Photosynthesis

Photosynthesis	The process which occurs in the chloroplasts to produce glucose using sunlight

Carbon dioxide + water → glucose + oxygen

A	Water is absorbed from the soil though the roots
B	Water travels up the stem
C	Carbon dioxide diffuses into the leaf
D	Energy from the sun is absorbed by chloroplasts in the leaf



7. Maximising plant growth

Farmers want to produce the maximum yield from their crops. This involves a delicate balance of cost against increase in yield.

Carbon dioxide	Light	Minerals	Temperature
Increasing the CO_2, increase the rate of photosynthesis which produces more glucose for plants to grow. Some farmers burn candles in their greenhouses to increase the levels of CO_2	Increasing the light during the evening means that plants can photosynthesis longer and grow quicker. Increasing light is expensive so this needs to be considered before using artificial lighting	Plants need nitrates, magnesium, and other minerals from the soil. These minerals can sometimes get used up or washed away. Farmers can use organic or artificial fertilisers.	Increasing the temperature to 30°C can increase the rate of photosynthesis. However, when the temperature is increased the plant loses more water and if it gets too hot the plant dies.