

Write the keywords next to the correct definition. **a**

**Keywords:** ecosystem, abiotic factor, population interdependence, community, biotic factor, stable community.

All the populations of different organisms that live together in a habitat. \_\_\_\_\_

Where all the species and environmental factors are in balance so that population sizes remain stable. \_\_\_\_\_

A community and its habitat. \_\_\_\_\_

All the members of a single species that live in a habitat. \_\_\_\_\_

A network of relationships between different organisms in a community. \_\_\_\_\_

A living thing that affects the ecosystem. \_\_\_\_\_

A non-living part of the environment that affects living organisms. \_\_\_\_\_

Animals and plants in a community can be **interdependent**. **b**

Give one way that animals rely on plants.  
\_\_\_\_\_  
\_\_\_\_\_

Give one way that animals rely on other animals.  
\_\_\_\_\_  
\_\_\_\_\_

Give one way that plants rely on animals.  
\_\_\_\_\_  
\_\_\_\_\_

Plants may have to compete with other plants. Name two factors they might have to compete for and explain how this might affect growth. **c**

**Factor 1:** \_\_\_\_\_  
Effect on growth: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Factor 2:** \_\_\_\_\_  
Effect on growth: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Give three things that animals compete with each other for. **d**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Label each factor below with biotic or abiotic. **e**

- light intensity \_\_\_\_\_
- new predators arriving \_\_\_\_\_
- availability of food \_\_\_\_\_
- soil pH \_\_\_\_\_
- carbon dioxide levels for plants \_\_\_\_\_
- wind intensity and direction \_\_\_\_\_
- new pathogens \_\_\_\_\_
- temperature \_\_\_\_\_
- moisture levels \_\_\_\_\_
- oxygen levels (for aquatic organisms) \_\_\_\_\_
- One species outcompeting another so that the numbers are no longer sufficient to breed. \_\_\_\_\_
- soil mineral content \_\_\_\_\_

Red squirrels are the native squirrel species in European woodlands. Grey squirrels were introduced to the UK in the late 19th century. **f**



Grey squirrels feed more often at ground level than red squirrels and are able to digest acorns, which the reds can't. Explain how this will have affected the number of red squirrels.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Grey squirrels carry a deadly pox virus which does not affect them. Explain how this will have affected the number of red squirrels.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

In 2010, an oil spill off the coast of Mexico polluted 1100 miles of coastline. The oil is thick and black and floats on the top of the water. Explain how this will have affected the growth of the marine plants that live on the floor of the ocean. Fill in the gaps. **g**

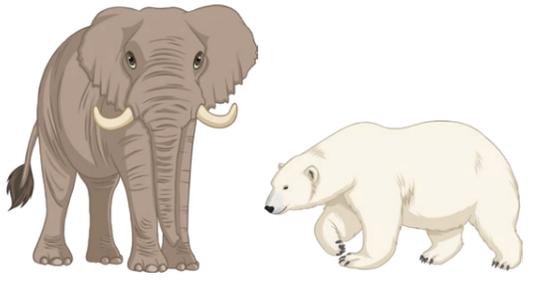
The \_\_\_\_\_ cannot pass through the oil on the surface of the water. The \_\_\_\_\_ won't reach the \_\_\_\_\_ so they won't be able to \_\_\_\_\_. This means they won't be able to \_\_\_\_\_.

Organisms that live in extreme environments are called \_\_\_\_\_. **h**

Give three examples of extreme environments.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Fill in the gaps: **i**



Most desert animals have a \_\_\_\_\_ surface area to volume ratio and \_\_\_\_\_, \_\_\_\_\_ ears. This helps them to transfer \_\_\_\_\_ from their skin to the \_\_\_\_\_ which allows them to \_\_\_\_\_.

Animals in cold climates have a small \_\_\_\_\_ and \_\_\_\_\_ ears. This \_\_\_\_\_ the transfer of energy to the \_\_\_\_\_. These animals often have thick layers of fat and fur for \_\_\_\_\_ which helps to keep them \_\_\_\_\_.

Explain why camouflage is useful to... **j**

predators: \_\_\_\_\_

prey: \_\_\_\_\_

Link the type of adaptation to the correct example. **k**

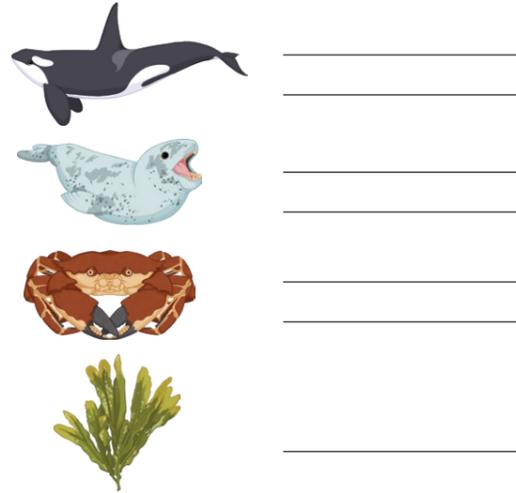
structural adaptation	Animal actions, such as migration or bird calls.
behavioural adaptation	Physical features, such as the shape or colour of the organism.
functional adaptation	The process of developing a trait that helps with survival, like temperature regulation.

Fill in the gaps: **l**

\_\_\_\_\_ is the variety of all the different \_\_\_\_\_ of organisms within an ecosystem. It is important to maintain a good level of \_\_\_\_\_ because it \_\_\_\_\_ the dependence of one species on another for \_\_\_\_\_, \_\_\_\_\_ and maintenance of the physical environment.

The illustration shows an ocean food chain. Label each organism with the correct keywords from the list below.

**Keywords:** tertiary consumer, producer, primary consumer, carnivore, secondary consumer, herbivore.



Name a predator from the food chain.

Name an organism from the food chain that is prey.

Fill in the gaps:

Producers use energy from \_\_\_\_\_ to make \_\_\_\_\_ during \_\_\_\_\_. The \_\_\_\_\_ is used to synthesise molecules that add to the \_\_\_\_\_ of the organism.

A student uses a 1m<sup>2</sup> quadrat to take 10 random readings of dandelions in the school field. The results are shown below.

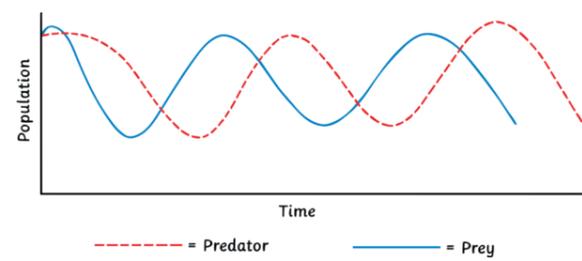
1	2	3	1	2	3	1	5	3	3
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What is the range of their data?

What is the mode of their data?

What is the median of their data?

What is the mean of their data?



The numbers of predators and prey fall and rise in cycles.

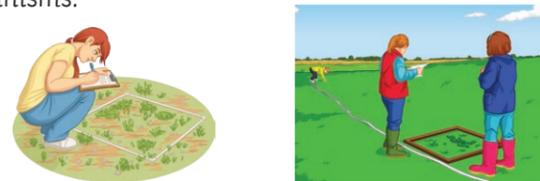
What conditions will cause the increase in prey numbers?

Explain what happens to the predator numbers when the prey numbers increase.

Explain what happens to the prey numbers when the predator numbers increase.

Why do the predator numbers begin to fall again?

Label the illustrations with the method being used to determine the **abundance** and **distribution** of organisms.

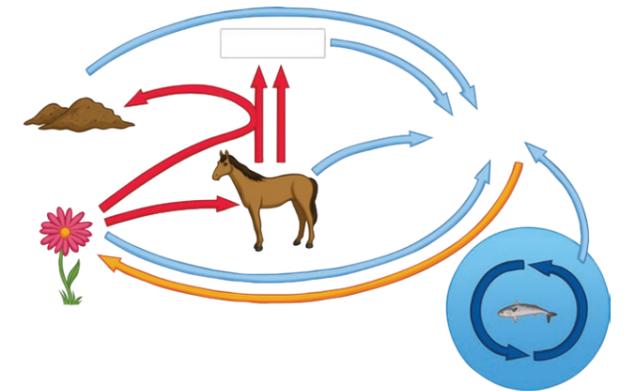


The abundance is...

The distribution is...

Label each of the arrows in the illustration of the carbon cycle with the process that the arrow represents.

**Keywords:** death, photosynthesis, respiration, fossil fuels, feeding, combustion, waste materials, carbon dioxide in the air, combustion, decomposers, dissolving/evaporation, surface, deep sea.



Fill in the gaps:  
 \_\_\_\_\_ break down dead bodies and waste materials. They release \_\_\_\_\_ as waste products back into the soil and \_\_\_\_\_ back into the air. These can then be used by \_\_\_\_\_ in the food chain.

The water cycle provides fresh water for plants and animals on land. Describe the role of each of the following processes in the water cycle:

transpiration: \_\_\_\_\_

respiration: \_\_\_\_\_

evaporation: \_\_\_\_\_

condensation: \_\_\_\_\_

precipitation: \_\_\_\_\_

How does pollution occur...  
 in water?

in the air?

on land?

How have humans affected the use of land?

Explain how each of the following affects global warming.

deforestation: \_\_\_\_\_

growing rice fields or grazing cattle: \_\_\_\_\_

destruction of peat bogs: \_\_\_\_\_

burning fossil fuels: \_\_\_\_\_

Fill in the gaps:  
 Global warming may cause \_\_\_\_\_ as sea levels rise which means \_\_\_\_\_ are lost. This will reduce \_\_\_\_\_. Climate change may mean some organisms are no longer able to survive and will become \_\_\_\_\_. This reduces \_\_\_\_\_.

Changes in temperature and rainfall may also affect the \_\_\_\_\_ of organisms and cause a change in the \_\_\_\_\_ patterns of animals.

Write the keywords next to the correct definition. **a**

**Keywords:** ecosystem, abiotic factor, population interdependence, community, biotic factor, stable community.

All the populations of different organisms that live together in a habitat. **community**

Where all the species and environmental factors are in balance so that population sizes remain stable. **stable community**

A community and its habitat. **ecosystem**

All the members of a single species that live in a habitat. **population**

A network of relationships between different organisms in a community. **interdependence**

A living thing that affects the ecosystem. **biotic factor**

A non-living part of the environment that affects living organisms. **abiotic factor**

Plants may have to compete with other plants. Name two factors they might have to compete for and explain how this might affect growth. **c**

**Factor 1:**  
Effect on growth:

**Factor 2:**  
Effect on growth:

**light** – Needed to provide energy for photosynthesis. Reduction of light will reduce photosynthesis and therefore the glucose needed for growth.

**space** – The plant may not have enough space to grow, or enough space for a big root system to get water and nutrients, so growth would be reduced.

**water** – Needed for photosynthesis. Less water will reduce photosynthesis and therefore the glucose required for growth.

**mineral ions** – Needed to produce larger molecules for growth. If the plant gets less of these, its growth will be reduced.

Red squirrels are the native squirrel species in European woodlands. Grey squirrels were introduced to the UK in the late 19th century. **f**



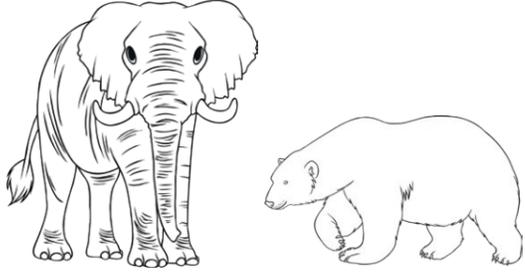
Grey squirrels feed more often at ground level than red squirrels and are able to digest acorns, which the reds can't. Explain how this will have affected the number of red squirrels.

**They will have decreased because the grey squirrels have more access to food so are more likely to survive and reproduce.**

Grey squirrels carry a deadly pox virus which does not affect them. Explain how this will have affected the number of red squirrels.

**They will have reduced because they are not immune to the virus so it will have spread through the population.**

Fill in the gaps: **i**



Most desert animals have a **large** surface area to volume ratio and **large, thin** ears. This helps them to transfer **energy** from their skin to the **surroundings** which allows them to **cool down**.

Animals in cold climates have a small **surface area to volume ratio** and **small** ears. This **reduces** the transfer of energy to the **surroundings**. These animals often have thick layers of fat and fur for **insulation** which helps to keep them **warm**.

Animals and plants in a community can be **interdependent**. **b**

Give one way that animals rely on plants.

- Plants produce food by photosynthesis;
- animals eat plants;
- animals use plant materials for building nests or shelters.

Give one way that animals rely on other animals.

- Animals eat other animals;
- animals use animal materials for building nests or shelters.

Give one way that plants rely on animals.

- Animals pollinate plants;
- plants use animal waste for nutrients;
- plants use animals for seed dispersal.

Give three things that animals compete with each other for. **d**

- food
- mates
- territory

In 2010, an oil spill off the coast of Mexico polluted 1100 miles of coastline. The oil is thick and black and floats on the top of the water. Explain how this will have affected the growth of the marine plants that live on the floor of the ocean. Fill in the gaps. **g**

The **sunlight** cannot pass through the oil on the surface of the water. The **sunlight** won't reach the **plants** so they won't be able to **photosynthesise**. This means they won't be able to **grow**.

Label each factor below with biotic or abiotic. **e**

- light intensity **abiotic**
- new predators arriving **biotic**
- availability of food **biotic**
- soil pH **abiotic**
- carbon dioxide levels for plants **abiotic**
- wind intensity and direction **abiotic**
- new pathogens **biotic**
- temperature **abiotic**
- moisture levels **abiotic**
- oxygen levels (for aquatic organisms) **abiotic**
- One species outcompeting another so that the numbers are no longer sufficient to breed. **biotic**
- soil mineral content **abiotic**

Explain why camouflage is useful to... **j**

predators:  
**so that their prey don't see them coming.**

prey:  
**so that they can hide from predators.**

Link the type of adaptation to the correct example. **k**

structural adaptation	Animal actions, such as migration or bird calls.
behavioural adaptation	Physical features, such as the shape or colour of the organism.
functional adaptation	The process of developing a trait that helps with survival, like temperature regulation.

Organisms that live in extreme environments are called **extremophiles**. **h**

Give three examples of extreme environments.

- high temperature
- high pressure
- high salt concentration

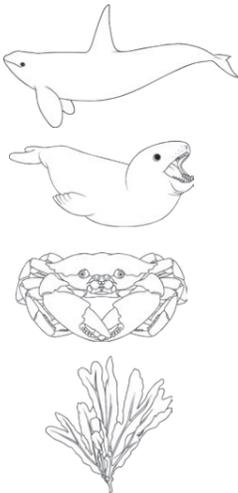
Fill in the gaps: **l**

**Biodiversity** is the variety of all the different **species** of organisms within an ecosystem.

It is important to maintain a good level of **biodiversity** because it **reduces** the dependence of one species on another for **food, shelter** and maintenance of the physical environment.

The illustration shows an ocean food chain. Label each organism with the correct keywords from the list below.

**Keywords:** tertiary consumer, producer, primary consumer, carnivore, secondary consumer, herbivore.

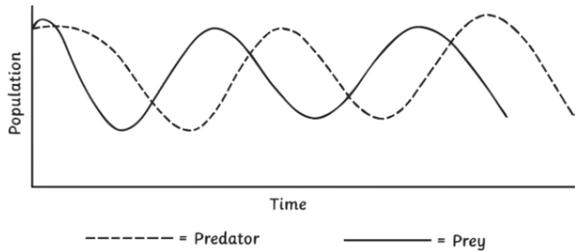


**tertiary consumer carnivore** (shark)  
**secondary consumer carnivore** (seal)  
**primary consumer herbivore** (crab)  
**producer** (seaweed)

Name a predator from the food chain.  
**Either the shark or seal.**

Name an organism from the food chain that is prey.  
**Either the seal or crab.**

Fill in the gaps:  
 Producers use energy from **sunlight** to make **glucose** during **photosynthesis**. The **glucose** is used to synthesise molecules that add to the **biomass** of the organism.



The numbers of predators and prey fall and rise in cycles.

What conditions will cause the increase in prey numbers?

- **When there is plenty of food available.**
- **When there are few predators.**

Explain what happens to the predator numbers when the prey numbers increase.  
**The predator numbers increase because there is lots of food available for them, so they are able to survive and reproduce.**

Explain what happens to the prey numbers when the predator numbers increase.  
**The large number of predators around to eat the prey cause the prey numbers to fall.**

Why do the predator numbers begin to fall again?  
**The reduced number of prey means there is less food for the predators.**

A student uses a 1m<sup>2</sup> quadrat to take 10 random readings of dandelions in the school field. The results are shown below.

1	2	3	1	2	3	1	5	3	3
---	---	---	---	---	---	---	---	---	---

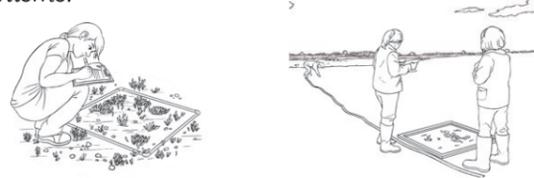
What is the range of their data?  
**1-5 dandelions per m<sup>2</sup>**

What is the mode of their data?  
**3 dandelions per m<sup>2</sup>**

What is the median of their data?  
**3 dandelions per m<sup>2</sup>**

What is the mean of their data?  
**2.6 dandelions per m<sup>2</sup>**

Label the illustrations with the method being used to determine the **abundance** and **distribution** of organisms.

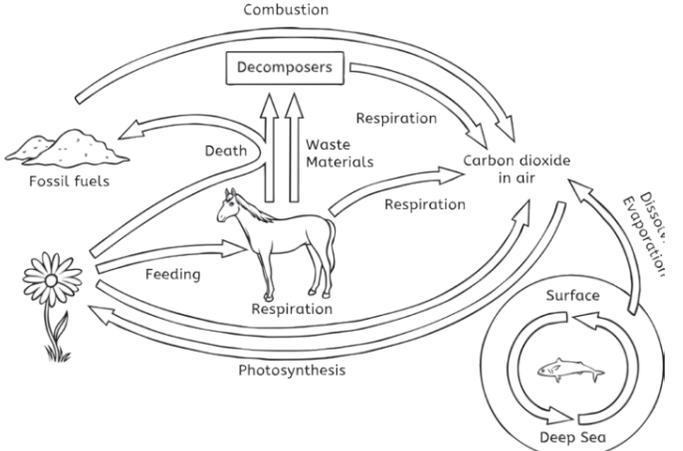


**quadrat**                      **transect**

The abundance is...  
**the number of species in an area.**

The distribution is...  
**how the number of species changes from one area to another.**

Label each of the arrows in the illustration of the carbon cycle with the process that the arrow represents.



**Keywords:** death, photosynthesis, respiration, fossil fuels, feeding, combustion, waste materials, carbon dioxide in the air, combustion, decomposers, dissolving/evaporation, surface, deep sea.

Fill in the gaps:  
**Decomposers** break down dead bodies and waste materials. They release **mineral ions** as waste products back into the soil and **carbon dioxide** back into the air. These can then be used by **producers** in the food chain.

How have humans affected the use of land?  
**Reduced the amount of land available to other organisms by building, quarrying, farming and putting waste into landfill.**  
**Destroyed peat bogs which reduces biodiversity in those areas.**  
**Large scale deforestation to provide land for cattle and rice fields, and growing crops for biofuels, reduces biodiversity.**

The water cycle provides fresh water for plants and animals on land. Describe the role of each of the following processes in the water cycle:

transpiration: **Returns water to the atmosphere from plants.**  
 respiration: **Returns water to the atmosphere from plants and animals.**  
 evaporation: **Returns water to the atmosphere from oceans.**  
 condensation: **Causes water vapour in the atmosphere to form liquid droplets in clouds.**  
 precipitation: **Returns fresh water to the land via rain, hail or snow.**

Explain how each of the following affects global warming.

deforestation: **Reduces the rate at which carbon dioxide is removed from the atmosphere by photosynthesis. Burning the trees also releases carbon dioxide via combustion.**  
 growing rice fields or grazing cattle: **Both of these release methane into the atmosphere.**  
 destruction of peat bogs: **When peat is burnt as a fuel or used in gardens, carbon dioxide is released.**  
 burning fossil fuels: **Releases carbon dioxide into the atmosphere.**

How does pollution occur...  
 in water?  
**From sewage, fertiliser or toxic chemicals that are washed or dumped into water.**  
 in the air?  
**From smoke and acidic gases (sulphur dioxide and nitrogen oxides) which cause acid rain.**  
 on land?  
**From landfill and toxic chemicals from farming.**

Fill in the gaps:  
 Global warming may cause **flooding** as sea levels rise which means **habitats** are lost. This will reduce **biodiversity**. Climate change may mean some organisms are no longer able to survive and will become **extinct**. This reduces **biodiversity**.

Changes in temperature and rainfall may also affect the **distribution** of organisms and cause a change in the **migration** patterns of animals.