# Biomes and ecosystems

## What trees, plants and animals are in our local ecosystem?

**Lesson 1:** What biomes and ecosystems are found in the UK?



# Geographical knowledge and concepts



Alexander von Humboldt

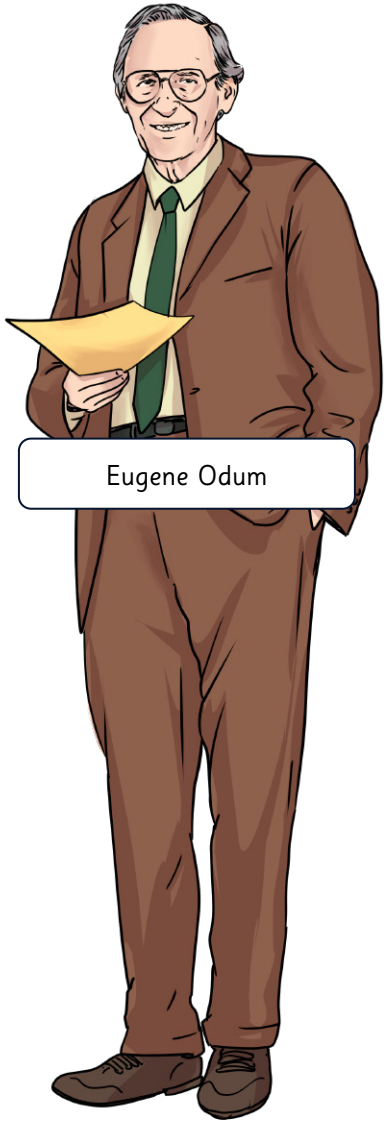
## Geographical knowledge

- Locational knowledge ✓
- Place knowledge
- Human and physical geography ✓
- Geographical skills and fieldwork

## Geographical concepts

- Place
- Space
- Scale
- Physical and human processes
- Interdependence ✓
- Environmental impact
- Sustainable development
- Cultural awareness and diversity

# What trees, plants and animals are in our local ecosystem?



Eugene Odum

**Lesson 1: What biomes and ecosystems are found in the UK?**

**Lesson 2:** What can I learn about ecosystems by studying the New Forest?

**Lesson 3:** How can I use maps to find out what ecosystems there are in my local area?

**Lesson 4:** What data can I collect from my local ecosystem?

**Lesson 5:** How can I present the data collected from my local ecosystem?

# Key vocabulary for this lesson



**climate** – the usual weather over a long period

---



**deciduous** – a plant that loses its leaves in autumn



**equator** – an imaginary circle around Earth which divides it into two equal parts



**evergreen** – a plant that keeps its green leaves all year

# Locational knowledge and physical geography

Human and physical geography

Locational knowledge



Hello! I'm Allisandra, and I am a geographer.

Every place in the world is different, largely because of where it is located.

A place's location affects its temperature and **climate**, and therefore the plants and animals that live there.

When describing a location, we can use lines of **longitude** and **latitude**.

## New word alert!

**longitude** – imaginary lines drawn up and down the Earth to show how far east or west a place is

**latitude** – imaginary lines drawn sideways around the Earth to show how far north or south a place is

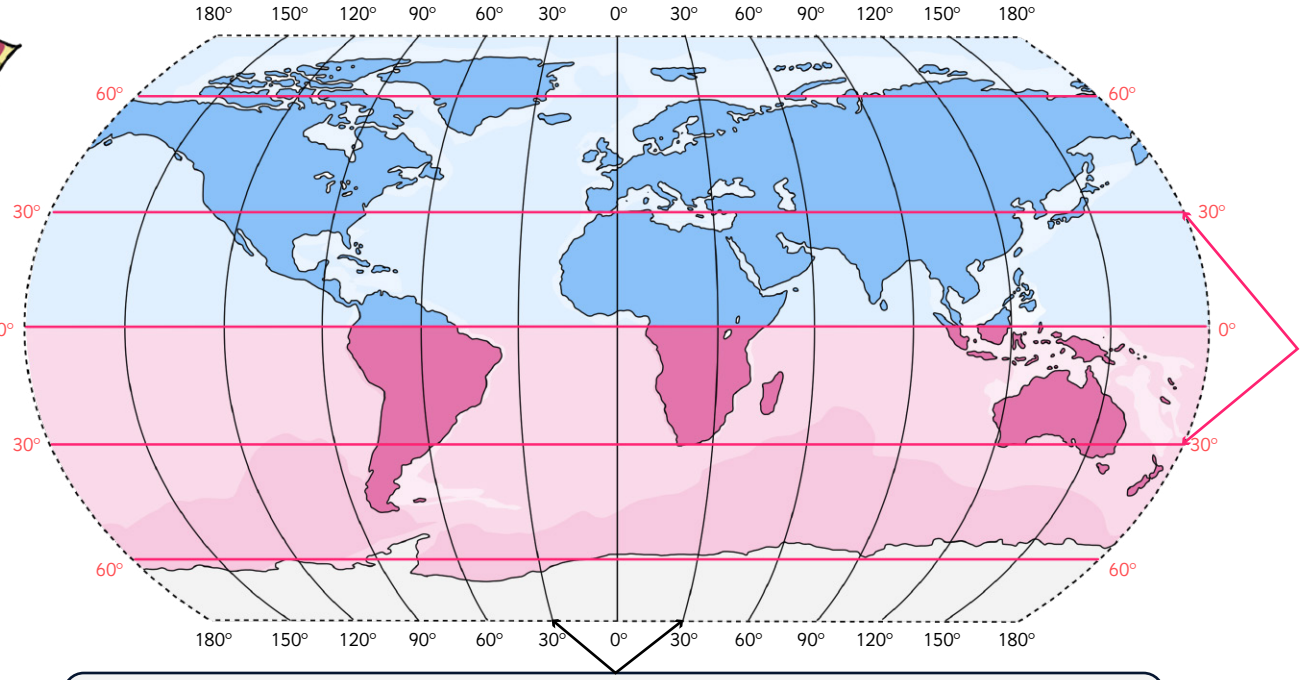
# Longitude and latitude



We use **imaginary lines** to **explore** the world's geography and **locate** different places.



equator

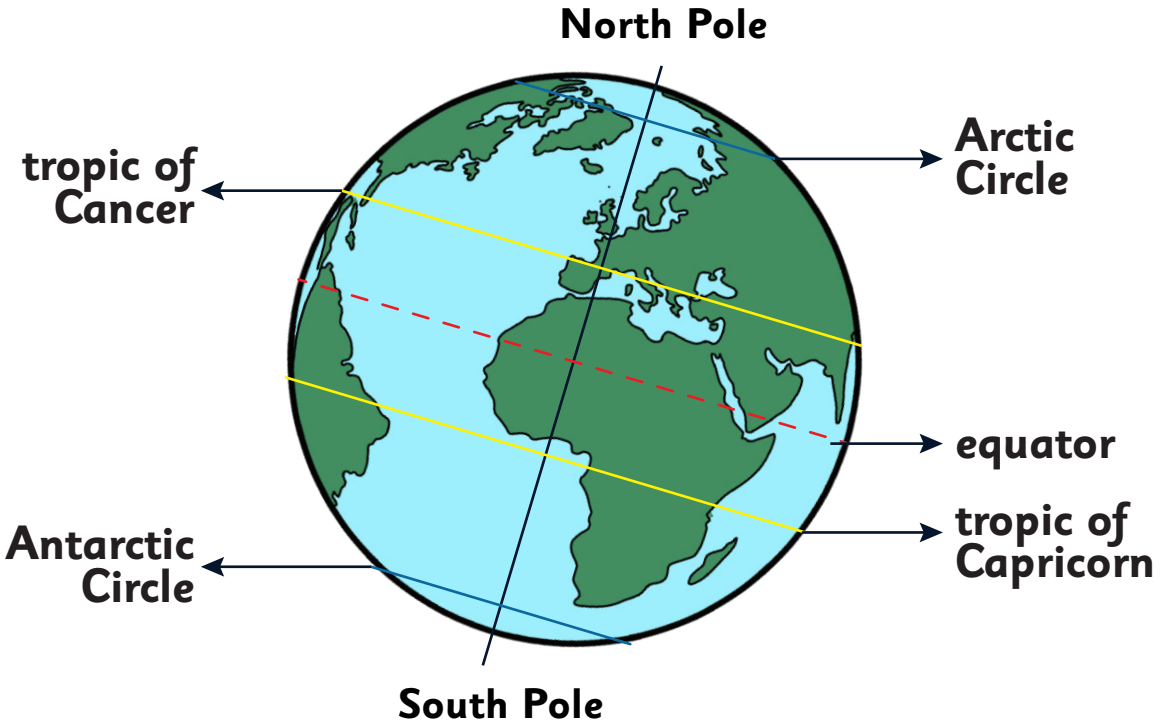



Lines of **latitude** go around the world, **parallel to the equator**, and show how far **north** or **south** a place is.

**Lines of longitude** are imaginary lines that run from the North Pole to the South Pole and tell us how far east or west a place is.

# Lines of latitude






A place's **latitude** affects its **temperature** and **climate**. Some lines of latitude have **special names**, as shown in this diagram.

It is **very hot around the equator** and between the **tropic of Cancer** and the **tropic of Capricorn**.

As you move **further away from the equator**, the temperature **generally gets colder**.

# What is a biome?



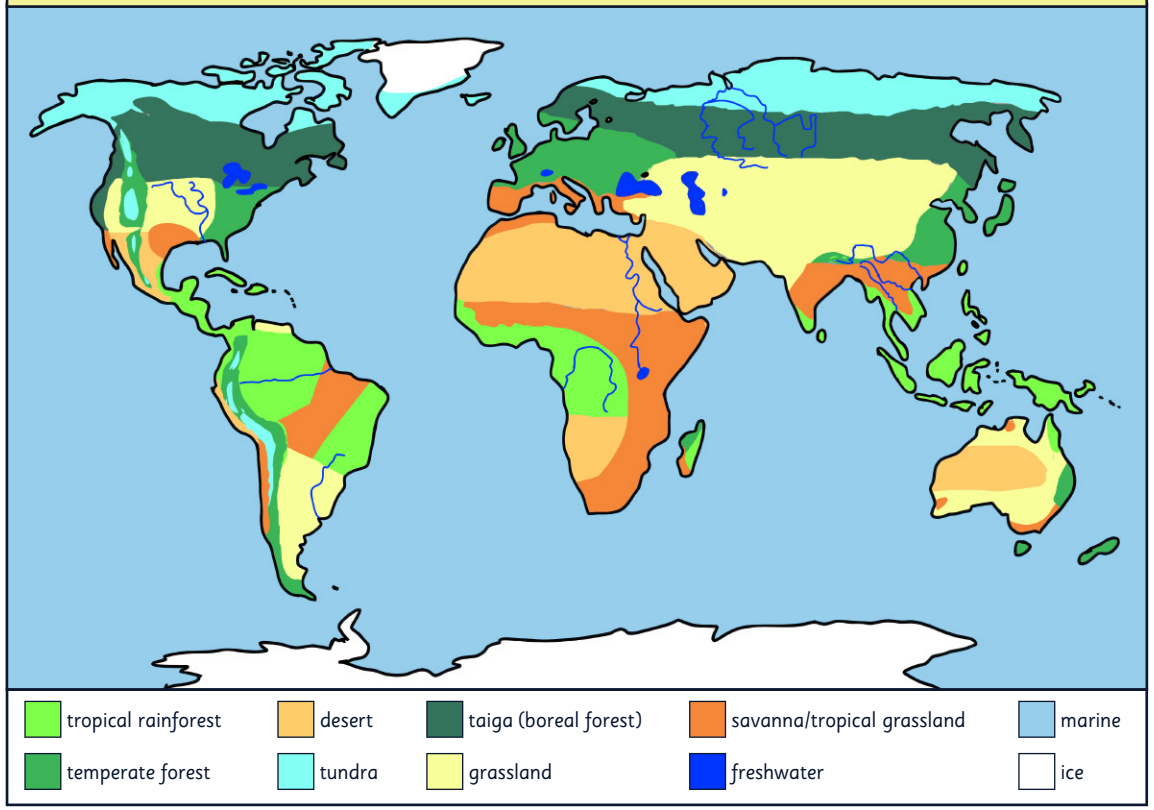
We can be more specific about what an area is like by referring to the type of **biome** it is in.

Each **biome** has its own **climate** , as well as **plants and animals** suited to living there.

This map shows the world's **main biomes**.

Biomes are large areas with similar **climates**, **plants** and **animals**.

**Biomes of the world**




**New word alert!**

**biome** – an area of the world with its own climate, plants and animals

# World biomes



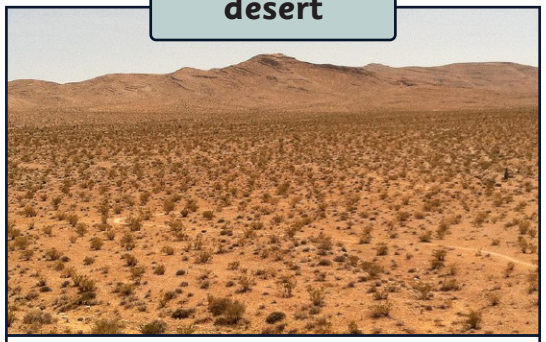
## tundra



**Tundra biomes:**

- are very cold
- have few plants
- have few animals
- are found mainly in the Arctic Circle and other very cold northern areas

## desert



**Desert biomes:**

- are very dry
- have few plants
- have few animals (most found here are nocturnal)

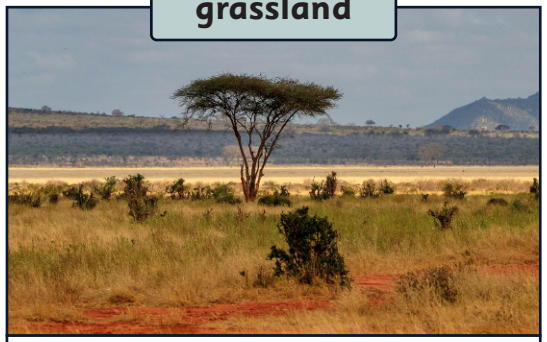
## marine



**Marine biomes:**

- are home to a variety of underwater plants and animals
- can be saltwater (oceans and seas) or freshwater (rivers and lakes)
- are found all over the world

## grassland



**Grassland biomes:**

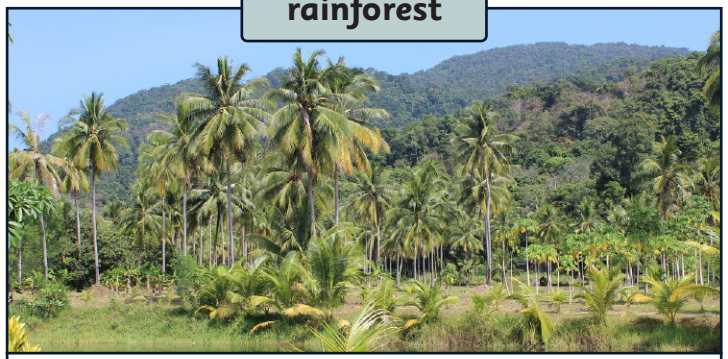
- have wet and dry seasons
- have warmer and colder seasons
- have few trees, but many plants, especially grasses and shrubs
- have a wide variety of animals

# World biomes



There are three types of forest **biomes called**:

## rainforest

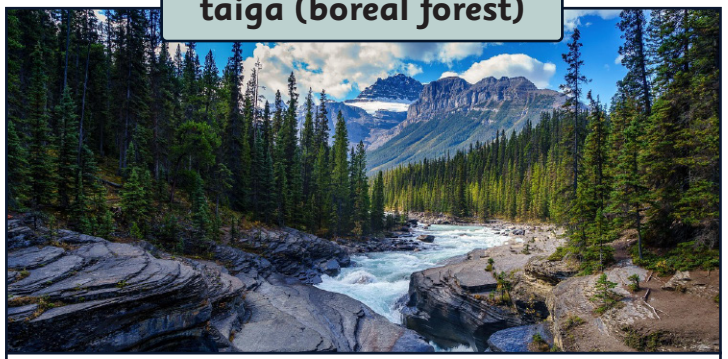


**Rainforest biomes:**

- are very hot
- are very wet
- have a wide variety of plants
- have a wide variety of animals

Most trees here **are evergreen with large**, wide leaves (broadleaf).

## taiga (boreal forest)

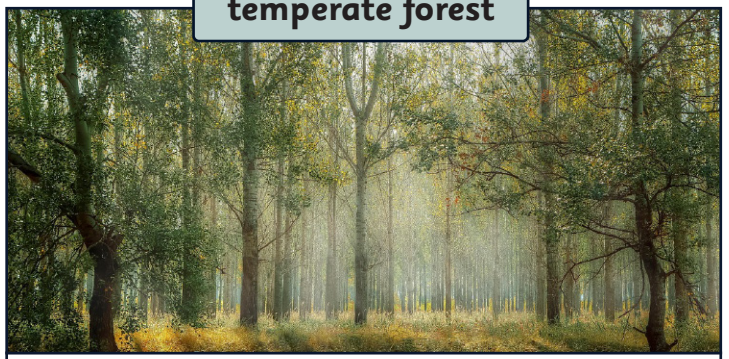


**Taiga (boreal forest) biomes:**

- have long and cold winters
- have short and mild summers
- have some well-adapted plants
- animals live here

Most trees here are **coniferous evergreen trees (such as pine and spruce)**.

## temperate forest



**Temperate forest biomes:**

- have four distinct seasons
- have mild temperatures, no extremes
- have moderate rainfall all year round
- have a variety of plants
- animals live here

Many trees here are **deciduous trees with broad leaves (such as oak and beech).**

# What type of biome is the UK in?

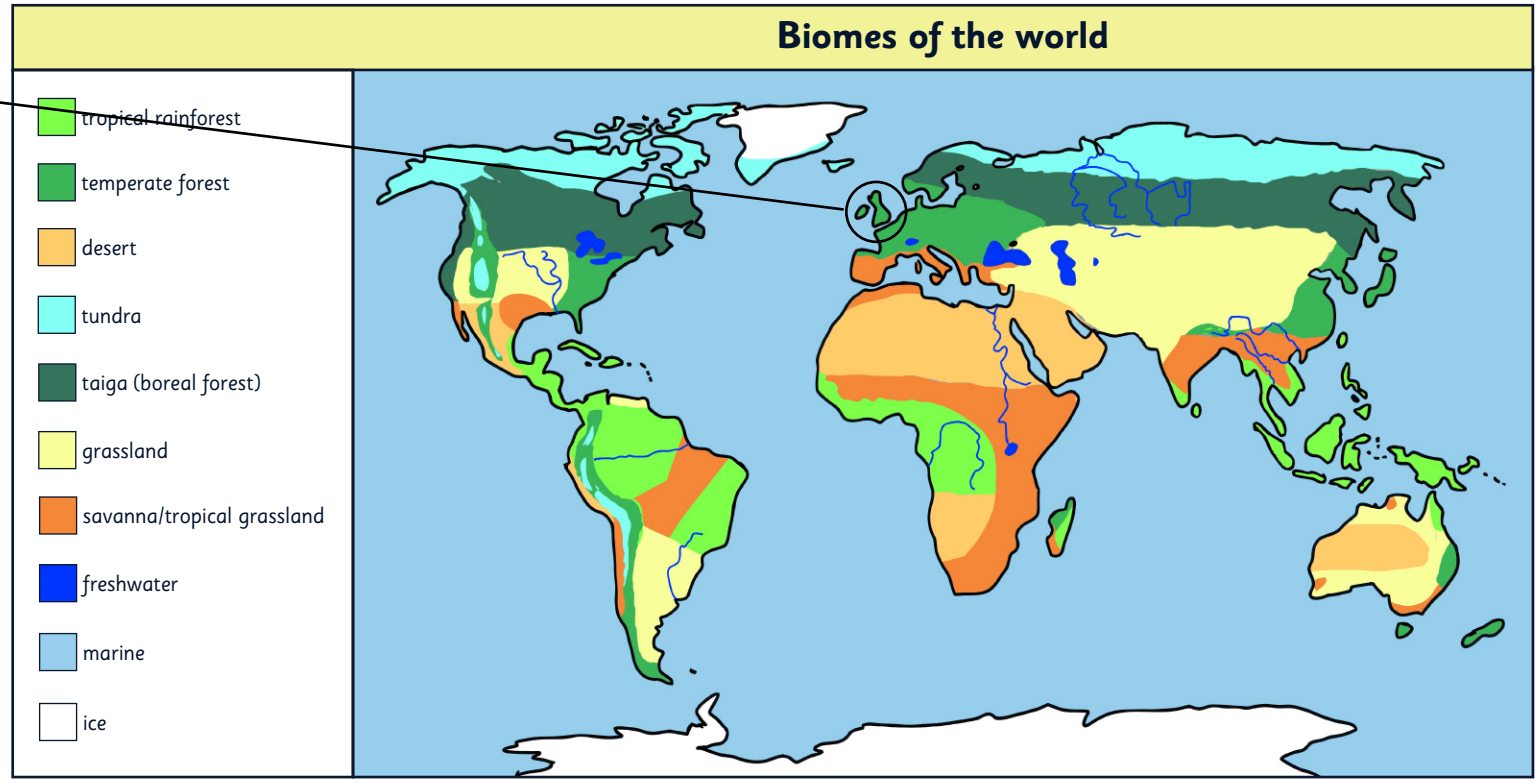
Human and physical geography

Locational knowledge

The UK is in a temperate forest biome .

## New word alert!

**temperate** – moderate temperatures and relatively mild weather

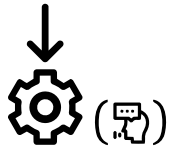


# Word detective

 **temperate** - moderate temperatures and relatively mild weather

The word **'temperate'** comes from Latin and originally described people who were level-headed and never got too angry. It is also used to describe a mild temperature.





**temper + ate = temperate**

"moderate, restrained or calm" "make, cause or describing"

Together, these word parts form a word meaning
**"having the quality of a moderate temperature."**

# What is it like in a temperate forest biome?

Human and physical geography

Locational knowledge

Read the statements below about the conditions within a **temperate forest biome** and discuss which one you think is false with your learning partner. Be ready to share your feedback with the class.

a) All the trees are evergreen.





b) There is a medium amount of rainfall.

c) The temperature is mild.






d) There are four distinct seasons of similar length.

# What is it like in a temperate forest biome?

answers

Human and physical geography

Locational knowledge

This statement is false. Temperate forests are usually made up of deciduous trees.

a) All the trees are evergreen.





b) There is a medium amount of rainfall.

c) The temperature is mild.






d) There are four distinct seasons of similar length.

# What type of vegetation belt does the UK belong to?

Human and physical geography

Locational knowledge

In the UK, many of the trees are **deciduous**, meaning they lose their leaves in autumn.

The UK is part of a **deciduous temperate forest vegetation belt**.



## New word alert!

**vegetation belt** – a large area of land where similar plants grow

# What animals are found in the UK?

Human and physical geography

Locational knowledge



The conditions in a **temperate biome** provide suitable habitats for a **wide variety** of mammals, birds, amphibians, reptiles, fish and invertebrates.

In the UK, some animals, such as **birds**, migrate to warmer regions during the winter. Other animals migrate **to the UK** because its climate is **milder than places further north**. Some animals, such as **hedgehogs**, hibernate or become less active during the winter.





**New word alert!**

**habitat** – a place where plants and animals live

# What ecosystems are there in the UK?



Some plants and animals share a **habitat** and rely on the environment and on each other for survival. This is called an **ecosystem**.



Ecosystems can be very big (like a forest).



Ecosystems can be very small (like a rockpool).

**New word alert!**

**ecosystem** – a place where plants, animals and the environment all live together and depend on each other

# Ecosystem activity

Human and physical geography

Locational knowledge

Look at these photographs of places around the UK.

**Name the main ecosystem shown in each picture with your learning partner. Use the word bank to help you.**

Be ready to share your feedback with the class.

**Word bank**

**lake, grassland, marsh, beach**












# Ecosystem activity

answers

Human and physical geography

Locational knowledge




**Grassland.**

This is an example of a **land-based ecosystem**. Other examples include ***forests***, **moorland** and **mountains**.




**A lake.**

This is an example of a **freshwater ecosystem**. Other examples include **rivers** and **ponds**.




**A beach.**

This is an example of a **coastal ecosystem**. Other examples include **cliffs** and **sand dunes**.




**A marsh.**

**A marsh** is an example of a **wetland ecosystem**. Other examples include **swamps** and ***fens***.

# Let's discuss



Discuss the following question with your learning partner.

**Which ecosystem do you think these animals belong to?**

Be ready to share your feedback with the class.

emperor dragonfly



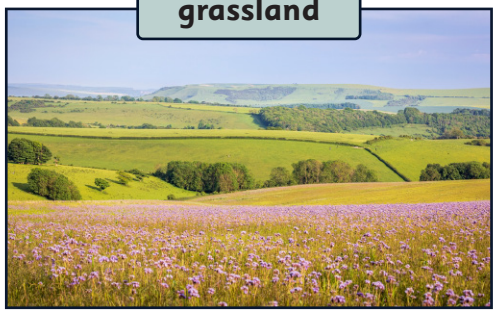
brown trout



whooper swan



grassland



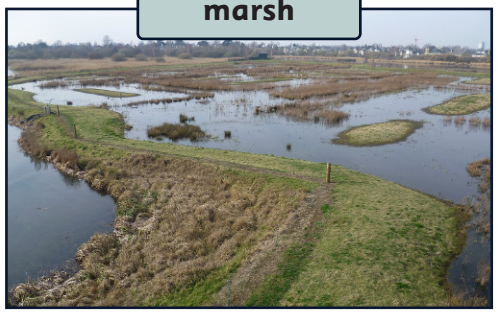
lake



beach



marsh



# Let's discuss

answers

Interdependence

These animals all belong to a lake ecosystem.

emperor dragonfly



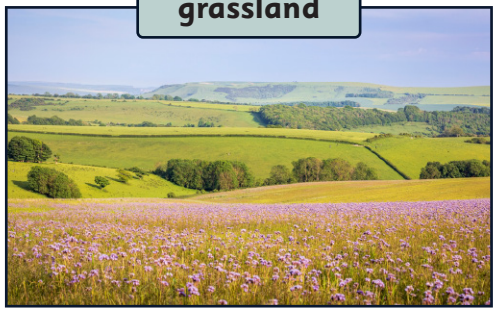
brown trout



whooper swan



grassland



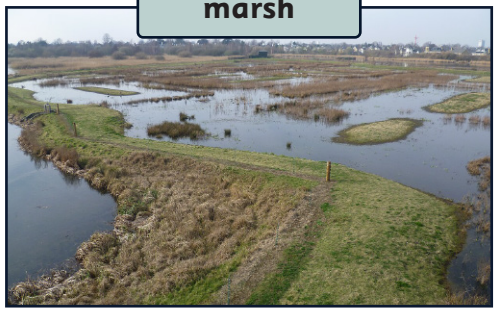
lake



beach



marsh



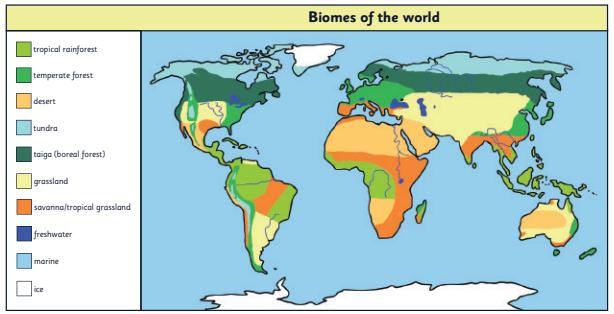
# Activity





Answer the questions on your activity worksheet to describe a temperate forest biome and the types of ecosystems found there.

## Activity




**Which biome is the UK mainly part of?**

_____

**Some of these characteristics of biomes ARE found in the UK biome and some are NOT.**

- four distinct seasons
- few plants
- mild temperatures, no extremes
- moderate rainfall all year round
- wet and dry seasons
- a variety of plants and animals live here
- few animals – most found here are nocturnal
- usual tree type deciduous (broadleaf)

**Write the ones you would expect to find in the UK biome, in the table.**



_____
_____
_____
_____
_____

**Name one example of an ecosystem found in the UK?**

_____

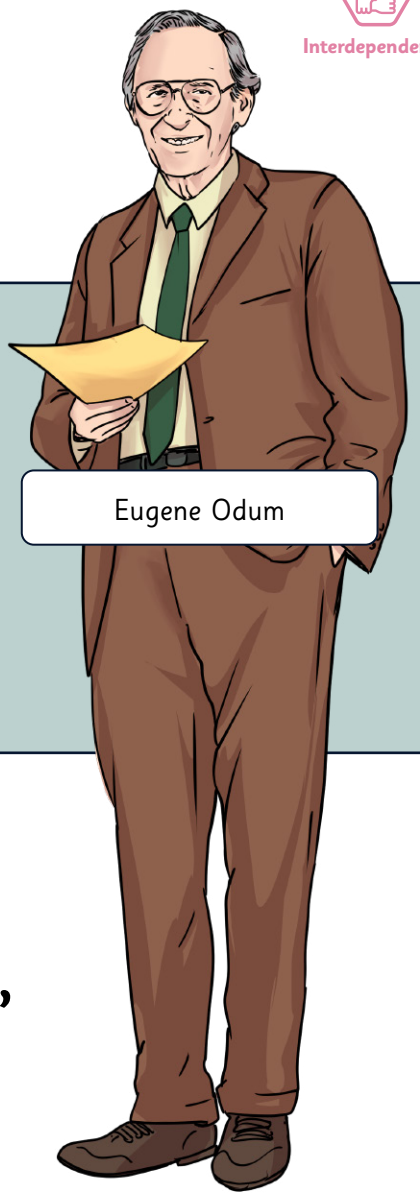
# Challenge






Discuss the following questions with your learning partner.

If we changed one thing in the UK's temperate biome, such as the amount of rainfall or the number of trees, how do you think it would affect the plants, animals and ecosystems here? Why?




Be ready to share your feedback with the class.
Use the following sentence starters to help you.

**"If one part of the biome changed, such as… , then…"**

**"If there was less/more rainfall.."**

# Challenge answers






## You might have said that:

- if there were fewer trees, then birds might lose their homes
- if a pond dried up, then frogs and insects would have less water to live in
- if there were less rainfall, some plants, such as ferns and moss, might dry out and die
- if there were more rain, some areas might flood, and some plants could get waterlogged
- if there was less plant life, animals, such as hedgehogs and rabbits, might have fewer habitats to live in

