

Living with the physical environment: Section B: Living World

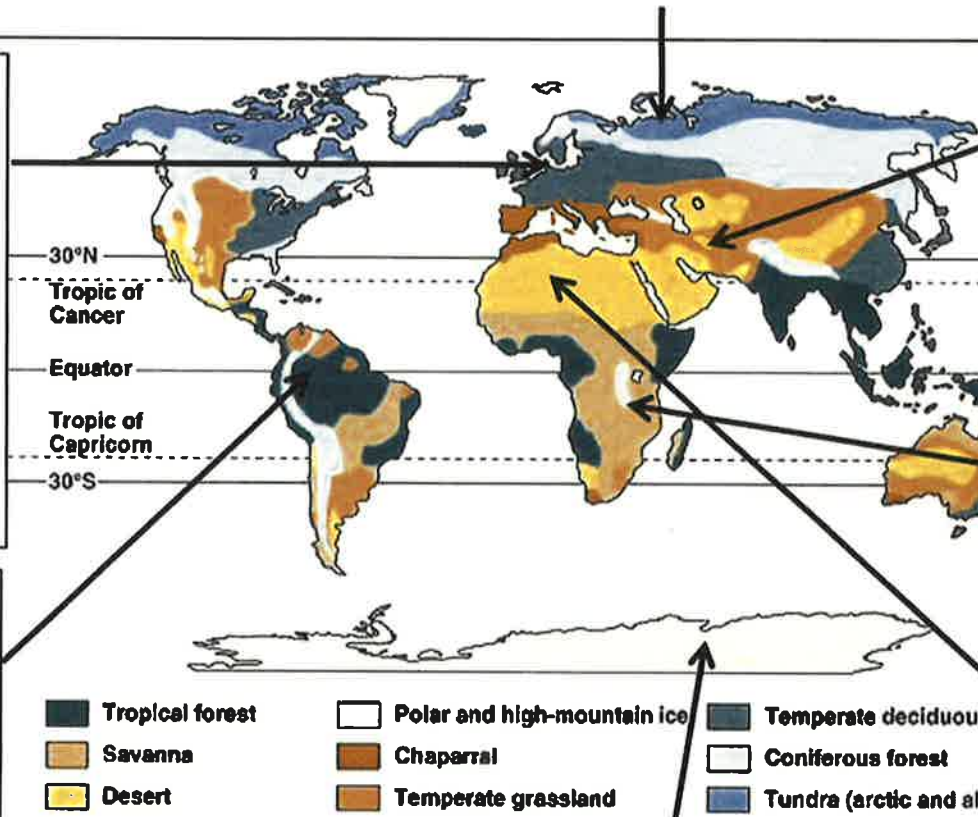
Global ecosystems: An overview of the distribution and characteristics of large scale natural global ecosystems.

- Global ecosystems are known as **BIOMES**
- The climate in an area determines what type of ecosystem form. So different parts of the world have different ecosystems, due to different climate. You often find similar ecosystems at similar lines of latitude.
- The map below shows the **global distribution of six major ecosystems.**

Tundra: Found at high latitudes above 60degrees N in northern Europe, Alaska, northern Canada. Winters are very cold, summers are brief and there is little rainfall. Little trees, vegetation included mosses, grasses and low shrubs. There's a layers of permanently frozen ground called permafrost.

Temperate Deciduous Forest: Found at mid latitude where there are four seasons. This is the biome for the UK. Summer are warm, winters are mid, rainfall all year round. Deciduous tree lose their leaves in winter to cope with colder weather. Also found in Eastern North America, Western Europe,

Tropical Rainforest: This is a very hot and wet biome located on or around the Equator and tropics. These forests are well known for their Biodiversity (the variety of plant and animal life in the world or in a particular habitat)



Temperate Grassland: Found at higher latitudes where there is more variation in temperature and less rainfall. No trees just grasses

Savanna Grassland: Found between the tropics. They are distinct dry and wet season, although rainfall is low. Found between a tropical rainforest and desert biome in Africa, Arabia and even Australia.

Hot Desert: Found between 15 and 35 degrees north and south of the equator. It is very hot and also very, very dry (little rainfall), it is cold at night, Examples includes famous examples such as the Sahara, the Namib.

Polar: Found between north and south poles. They are very cold icy and dry. Not much grows here. They are dark for several months each year so the growing season is very short – about 2 months.

KPI Name:

Explain adaptations in two contrasting biomes.

7. Hot deserts:

- Deserts are any areas which receive **less than 250mm of precipitation** per year.
- Deserts can be **hot or cold**.
- **Hot** deserts are usually found **within 20 and 30 degrees north and south of the equator**, where air is descending at the edge of an atmospheric cell.
- Because hot deserts are close to the equator, they experience high temperatures during the day.
- However, because of the **high pressure** there are few clouds. As a result, temperatures **drop dramatically at night**. This is because there is no cloud cover to retain the heat.



8. Adapting to hot deserts:

Mutations in a plant or animal's DNA make them slightly different to the generation before them. This makes further generations more suited to certain environments.

Feature of ecosystem:

Adaptations:

Low levels of precipitation

Some plants have **thin leaves or spines** to reduce water loss through **transpiration**.
 Some plants have **deep roots** so they can reach water deep underground.
 Some plants have **shallow, horizontal roots** which allow them to quickly collect any precipitation as it infiltrates the soil.
 Some animals have can survive **long periods without water**.



High temperatures

Some animals have **large ears** which increase **heat loss** and regulate their body temperature.
 Some desert animals are **nocturnal**, allowing to avoid high temperatures during the day.



Key words and terms:

Precipitation:

Rain, snow, sleet or hail which falls to the ground.

Mutation:

A change in something's DNA which can be passed down to further generations.

Spines:

A sharp spike on a plant or animal.

Transpiration:

When water is evaporated from the leaves of plants.

Nocturnal:

Animals which are active at night.

Plant adaptations

Taiga forests are usually full of conifer trees. These trees remain green all year round as they do not drop their leaves as they do not have the energy to regrow leaves each year. As well as this the trees need to be ready for photosynthesis to occur in spring. Conifer trees have specially adapted leaves which are needle shaped called pine needles. They are this shape so they have a small surface area so they lose less water from evaporation. They also have a waxy coating to help reduce water loss. The needles are a dark green colour so they can absorb as much sunlight as possible so they can photosynthesise. The needles contain only a little amount of sap so they do not freeze easily and can operate in cold conditions. There are only a few conifer species in the taiga ecosystem and they grow close together to gain protection from wind damage. Most are conical shaped with downward facing branches, this is so heavy snow falls off quickly.

Animal adaptations

Due to seasonality in terms of the climate there is also seasonality with animal life. During the summer months the taiga has a large amount of animal populations, this drops dramatically in winter. The Canadian taiga has over 300 bird species in the summer however, only 30 stay during the winter as many migrate south. They migrate to the taiga in winter due to a lot of insects. The animals that stay in the taiga all year round are specially adapted to live there. They generally have thick fur coats for insulation, smaller ears, noses and short tails to reduce the chance of frost bite. Many animals also hibernate during the winter months; they build up a large layer of fat during the summer months so they can go into a sleep-like state. Some animals develop a white coat during winter months to camouflage better.

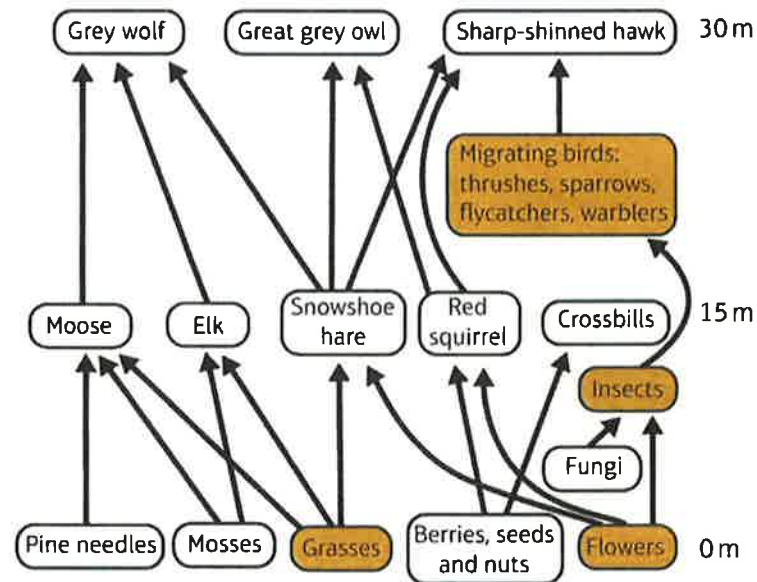


Figure 8 A food web for a Canadian taiga ecosystem

**Food webs**

The food webs in this ecosystem are much simpler in comparison to the rainforest as there is a lower biodiversity due to the climate. There is a limited amount of plant species, the trees are roughly the same height and only have one layer. The forest floors have little undergrowth and the soils are generally shallow with few nutrients. It is very dark due to conifers growing very close together. There are few reptiles and amphibians as they are cold blooded and they struggle to find heat in this environment. The few large mammals in the taiga have large territories and spend most of the summer building up their fat reserves.

Geography Knowledge Organiser - Glaciers (Glacial Landforms)

KPI Name:

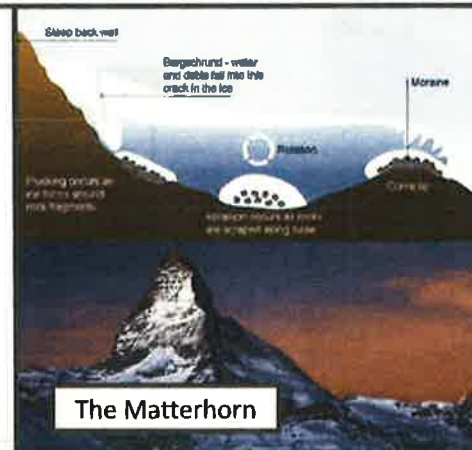
I know what glaciers are and I can identify key glacial landforms.

Main glacial landforms:

- The two main landforms created by glaciers are **corries** and **glacial troughs**.
- These two landforms then lead to other landforms, such as **pyramidal peaks** (corries) or **hanging valleys** (glacial troughs).

Corries:

- A corrie forms when a **small glacier** builds up in a sheltered hollow.
- **Plucking** and **freeze-thaw weathering** makes the back wall of the hollow steep.
- **Plucking** and **abrasion** scrape away at the base of the hollow.
- The rocks which fell into the glacier or which were plucked, are eventually deposited to form a **moraine** at the lip of the corrie.
- When two corries form next to each other, they form an **arête**.
- When three or more corries form back to back at the top of a mountain, they create a **pyramidal peak**. A good example of this is the **Matterhorn**, on the border between Switzerland and Italy.

**Key words and terms:**

Corrie (also known as a cirque in France or a cwm in Wales):

A half open, steep sided hollow on a mountainside which is formed by a glacier.

Arête:

A sharp mountain ridge, formed when two corries form side by side.

Pyramidal peak:

A sharply pointed mountain peak, which is formed when three or more corries form back to back.

V Shaped Valley:

Sloping valleys which form when rivers erode the land.

Glacial Trough (also known as a U shaped valley):

Steep sided valleys which form when glaciers erode V shaped valleys.

Hanging valleys:

Steep drop offs in U shaped valleys which form when the sides of V shaped valleys erode.

Ribbon Lakes:

Long, narrow lakes which fill U shaped valleys after glaciers have melted.

**Glacial troughs:**

- Glaciers will always take the easiest route. This often means travelling down valleys which were previously formed by rivers (V shaped valleys).
- Over time, glaciers erode these valleys further, through **plucking** and **abrasion**.
- When the glacier melts, it leaves a deep **U shaped valley**, also called a **glacial trough**.
- Many V shaped valleys had tributaries flowing into them. When glaciers erode these valleys, they leave a steep drop where these tributaries once flowed into the rivers. These are called **hanging valleys** and they often create **waterfalls**.
- When glaciers melt, long, narrow lakes often fill the valley floor. These are called **ribbon lakes**.