Your notes

GCSE Geography: revision notes

Tropical rainforests

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Physical characteristics

- Climate: hot all year (about 27 °C) and very wet (over 2,000 mm of rain a year), with heavy convectional rain most afternoons. There are no real seasons.
- Soils (latosols) are red and poor in nutrients, because heavy rain washes the nutrients away (leaching) and plants take them up quickly.
- Layers: **emergent** trees (up to 50 m tall), the **canopy** (a dense layer of treetops), the under-**canopy**, and the shrub layer on the dark forest floor.
- **Biodiversity** is extremely high: rainforests cover a small part of the Earth but are home to around half of the world's species of plants and animals.

Interdependence and adaptations

- The climate, soil, plants, animals and people all depend on each other. Leaf litter rots quickly in the warm, wet climate, and the nutrients are taken up fast by the plants.
- Plants: **buttress roots** support tall trees in shallow soil; **drip tips** on leaves let heavy rain run off; lianas (woody vines) climb trees to reach sunlight; **epiphytes** grow on other plants to reach the light.
- Animals: sloths move slowly to save energy and have algae in their fur for camouflage; spider monkeys have long limbs and tails for climbing; flying frogs glide between trees.

Case study: deforestation in Malaysia

- Causes: logging for valuable hardwood; commercial farming, especially palm oil plantations (Malaysia is one of the world's biggest producers); subsistence farming; road building; mineral extraction, such as tin; energy development (the Bakun Dam in Sarawak flooded about 700 km^2 of forest); settlement and population growth.

- Impacts: economic development (jobs, export income and electricity); soil erosion (no roots hold the soil, and no **canopy** shelters it from the rain); loss of **biodiversity** and of indigenous people's homes; and climate change (fewer trees absorb carbon dioxide, and burning them releases it).

Value and sustainable management

- Rainforests provide medicines, food, timber and jobs, store huge amounts of carbon, and help to control the water cycle and the local climate.
- Sustainable management: **selective logging** (only some mature trees are cut), replanting, conservation areas and national parks, education, **ecotourism**, international agreements (such as certified, sustainably logged timber) and debt reduction (swapping debt for protecting forest).

The taiga: forests under threat (Edexcel)

- The **taiga** (boreal forest) is a wide belt of forest across northern Canada, Scandinavia and Russia. Winters are long and very cold, often below –20 °C; summers are short and mild; and precipitation is fairly low, with snow lying for much of the winter.
- Coniferous trees such as spruce, pine and fir dominate. Their cone shape lets snow slide off, their needles lose little water, and staying evergreen lets them photosynthesise as soon as it is warm enough.
- **Biodiversity** is much lower than in rainforests, and the soils (podzols) are acidic and poor, because needles decompose slowly in the cold.
- Threats: logging for timber and paper, mining, oil and gas extraction (such as the tar sands in Alberta, Canada), hydroelectric dams, forest fires, pests and acid rain.
- Protection: national parks and wilderness areas where development is limited, sustainable forestry with replanting, and certification schemes for timber.

Key terms

Biodiversity	The variety of plant and animal species in an area.
Canopy	The dense layer of treetops in a rainforest.
Emergent	A very tall tree that rises above the canopy.
Buttress roots	Large roots above the ground that support tall trees.
Drip tip	A pointed leaf tip that lets heavy rain run off.
Epiphyte	A plant that grows on another plant to reach the light.
Deforestation	Cutting down or burning large areas of forest.
Selective logging	Cutting down only some mature trees and leaving the rest.
Ecotourism	Tourism that protects the environment and benefits local people.

Your notes

Taiga	The cold, coniferous (boreal) forest of northern Canada, Scandinavia and Russia. (Edexcel)

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is the climate of a tropical rainforest like?
2. Why are rainforest soils poor in nutrients?
3. What are buttress roots for?
4. Why do many rainforest leaves have drip tips?
5. What is an epiphyte?
6. Which layer of the rainforest forms a dense roof of treetops?
7. Why does a sloth have algae in its fur?
8. What is the main cause of deforestation in Malaysia?

Answers

1. Hot and wet all year
2. Heavy rain washes nutrients away, and plants take them up quickly
3. Supporting tall trees in shallow soil
4. So heavy rain runs off quickly
5. A plant that grows on another plant to reach the light
6. The canopy
7. For camouflage
8. Palm oil plantations

What to do next

Practise 15 questions on this topic

Try 5 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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