

**PONTEFRACT**  
ACADEMIES TRUST

**OUT OF LESSON  
WORK  
TERM 1  
YEAR 11  
GEOGRAPHY**



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# Physical Geography GCSE Year 11 Term1

In year 11 paper 1 exam  
includes the following topics:

**Section A: The challenge of natural  
hazards**

**Section B: The Living World**

**Section C: The Physical Landscapes  
in the UK**

**This Booklet is on The Living World**



Lesson 1 - Introduction to ecosystems

Lesson 2 - Changes in Ecosystems

Lesson 3 - Biomes

Lesson 4 - Tropical Rainforests

Lesson 5 Deforestation and Amazon Rainforest case Study

Lesson 6 - Impacts of Deforestation

Lesson 7 - Sustainable Management of Rainforests

Lesson 8 Hot Deserts

Lesson 9 & 10 - Case Study of a Hot Environment

Lesson 11 - Areas on the fringe of Hot deserts / Desertification



**This section is all about ecosystems.**

**This can be found on pages 28 – 41.**

**NOTE – you do not need to revise cold environments on pages 42 - 46**

### 3.1.2 Section B: The living world

In this section, students are required to study Ecosystems, Tropical rainforests and one from Hot deserts or Cold environments.

#### 3.1.2.1 Ecosystems

Key idea	Specification content
Ecosystems exist at a range of scales and involve the interaction between biotic and abiotic components.	An example of a small scale UK ecosystem to illustrate the concept of interrelationships within a natural system, an understanding of producers, consumers, decomposers, food chain, food web and nutrient cycling.  The balance between components. The impact on the ecosystem of changing one component.  An overview of the distribution and characteristics of large scale natural global ecosystems.

#### 3.1.2.2 Tropical rainforests

Key idea	Specification content
Tropical rainforest ecosystems have a range of distinctive characteristics.	The physical characteristics of a tropical rainforest.  The interdependence of climate, water, soils, plants, animals and people.


#### 3.1.2.3 Hot deserts

Key idea	Specification content
Hot desert ecosystems have a range of distinctive characteristics.	The physical characteristics of a hot desert.  The interdependence of climate, water, soils, plants, animals and people.  How plants and animals adapt to the physical conditions.  Issues related to biodiversity.
Development of hot desert environments creates opportunities and challenges.	A case study of a hot desert to illustrate: <ul style="list-style-type: none"> <li>development opportunities in hot desert environments: mineral extraction, energy, farming, tourism</li> <li>challenges of developing hot desert environments: extreme temperatures, water supply, inaccessibility.</li> </ul>
Areas on the fringe of hot deserts are at risk of desertification.	Causes of desertification – climate change, population growth, removal of fuel wood, overgrazing, over-cultivation and soil erosion.  Strategies used to reduce the risk of desertification – water and soil management, tree planting and use of appropriate technology.

Key idea	Specification content
Deforestation has economic and environmental impacts.	Changing rates of deforestation.  A case study of a tropical rainforest to illustrate: <ul style="list-style-type: none"> <li>causes of deforestation – subsistence and commercial farming, logging, road building, mineral extraction, energy development, settlement, population growth</li> <li>impacts of deforestation – economic development, soil erosion, contribution to climate change.</li> </ul>
Tropical rainforests need to be managed to be sustainable.	Value of tropical rainforests to people and the environment.  Strategies used to manage the rainforest sustainably – selective logging and replanting, conservation and education, ecotourism and international agreements about the use of tropical hardwoods, debt reduction.



## Lesson 1 - Introduction to Ecosystems

 Page 28 & page 29 - Ecosystems exist at a range of scales and involve the interaction between biotic and abiotic components

An example of a small scale ecosystem: Epping Forest

### Case Study of a UK Ecosystem

#### Epping Forest

Location: South-east England  
North-east of London

#### Case Study

A large number of native trees found in the tree foliage include oak, elm, ash and beech.

May find 20 species of dragonfly in the shrub layer.

A lower shrub layer of Holly and Hazel at 5m overlying a field layer of grasses, brambles, bracken, fern and flowering plants, 177 species of moss and lichen grow at Epping Forest.

Mammals, amphibian and reptile species call Epping Forest their home. You may find these close to the forest floor or in the shrub layer.

38 species of birds are supported in the tree foliage.

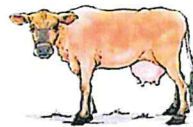
700 species of Fungi can be found at Epping forest, most likely on the forest floor.



#### Causes of Change

In the years 1976 to 1977, England experienced a drought that killed many trees.

A further 15 million trees were felled by a great storm in 1987.



#### Restoration of the woodland

In Epping Forest, East London more cattle grazing has been introduced into the ecosystem (ecosystem restoration) to encourage growth of flora (vegetation) such as veteran trees (legacy trees such as oak) as these declined from 1976-1988 due to extreme weather causing drought and felled trees. The oak allows fauna (animals) to consume it increasing or maintaining the number of species in the forest. Grazing allows more flowers to flourish than mowing would. Low-growing species such as Birds-foot Trefoil only thrive where the thatch of dead grass stems is regularly removed and hooves create bare ground.



Complete the key terms list below by adding the correct definitions - Remember to use the revision guide to help

- Ecosystem: \_\_\_\_\_
- Biotic components: \_\_\_\_\_
- Abiotic components: \_\_\_\_\_

Describe the pond ecosystem shown opposite

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

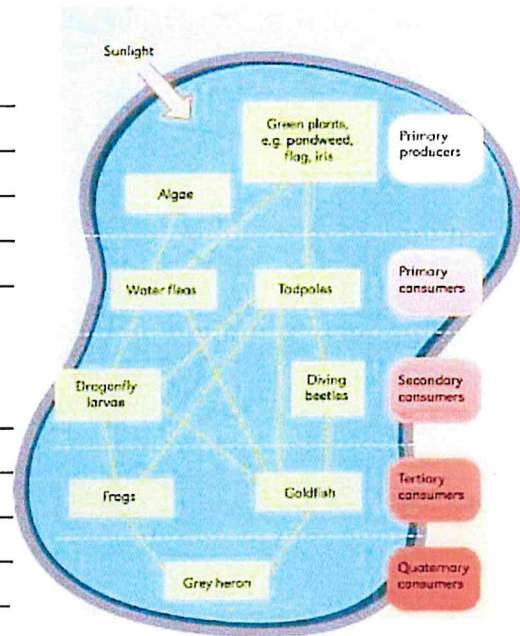
What happens to the biomass as you move further through the ecosystem? (Down on the diagram)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Page 28 - Complete the table below with the correct definitions and give an example for each that would be found in a freshwater pond:

Term	Definition	Example
Producers		
Primary Consumers		
Secondary Consumers		
Tertiary consumer		
Decomposers		
Food chain		
Food web		



<b>Nutrient cycling</b>	
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## Lesson 2 - Changes in Ecosystems

Ecosystems are very fragile and if there is a change to one component it may well have a knock-on effect on the rest of the ecosystem. What natural and human changes to ecosystems can you think of? There are 2 examples below...

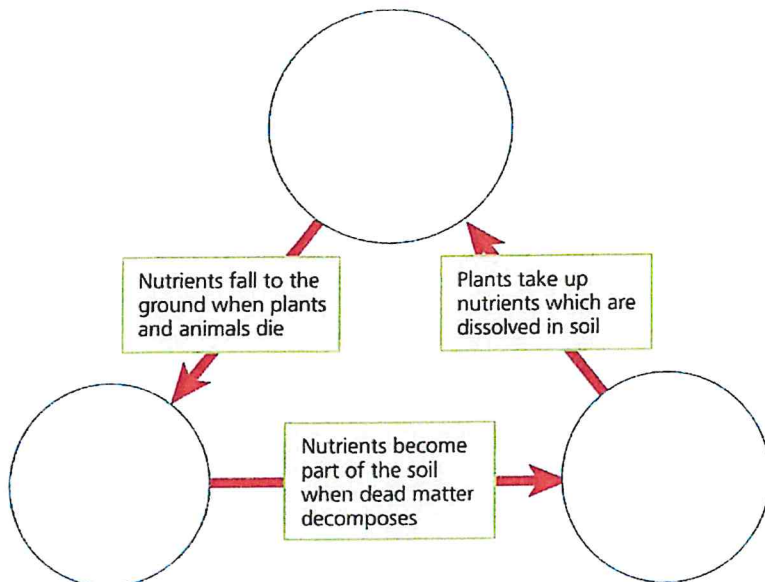
Natural changes	Changes due to human activity
Disease may reduce animal or plant numbers	Climate change

How can changes affect the pond ecosystem? Use the pond ecosystem diagram on the previous page to complete a flow diagram to show change. An example is done below:

- More perch (predators) are added to the pond → Smaller fish and frogs are eaten → Less food for creatures higher up the food chain, e.g. herons → More creatures lower down the food chain like slugs
- Your example here...

### Nutrient Cycle

Use the diagram on page 29 to fill in the circles on the the diagram

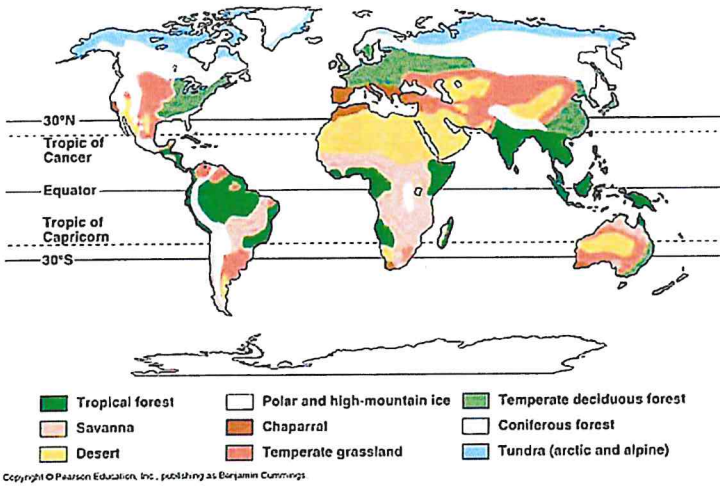






### Lesson 3 - Biomes

Large-scale (or global) ecosystems are known as global ecosystems or biomes (see map below):



Explain why ecosystems tend to form broad belts across the world from east to west, parallel to the lines of latitude. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Page 30-31 - Complete the table below outlining the location and characteristics of each biome:

Global ecosystem	Location	Characteristics
Tropical rainforest		
Desert		
Polar		
Deciduous and coniferous forests		
Temperate grasslands		
Mediterranean		



<b>Tropical grasslands</b>		
<b>Tundra</b>		



## Lesson 4 - Tropical Rainforests

Page 32 - page 37 - Tropical rainforest ecosystems have a range of distinctive characteristics

Where are tropical rainforests found? Look back 2 pages to help you

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What is the climate like? (page 32)

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Why is the temperature constantly high in the rainforest?

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Why is the rainfall high?

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Give 2 reasons why the soils in tropical rainforests are not very fertile (Page 32)

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

What is meant by biodiversity?

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Why is biodiversity so high in the tropical rainforests?

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### Plant and Animal Adaptations

Annotate the photograph below to describe and explain how plants have adapted to the rainforest:



Explain 3 animal adaptations that enable species to survive in tropical rainforests:



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



## Lesson 5 - Deforestation & Amazon Rainforest Case Study

 Page 34 - Page 35 - Deforestation has economic and environmental impacts

Every 2 seconds an area of rainforest the size of a football field is destroyed! Rainforests once covered 15.5 million km<sup>2</sup>, but now it is just over 6.2 million km<sup>2</sup>.

Why are huge areas of rainforest being destroyed?

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

Why is the rate of deforestation now decreasing in Brazil?

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

What is happening to the rainforests in Indonesia compared to Brazil?

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What effects is deforestation having?

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Page 35 - A case study of a tropical rainforest:  
Amazon, Brazil

Describe the location of the Amazon rainforest:

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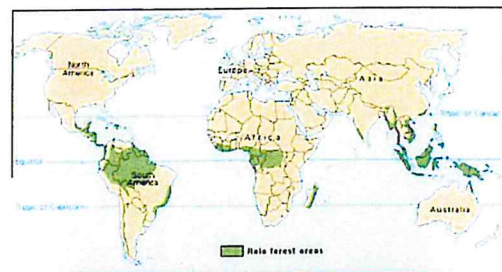
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What are the causes of deforestation in the Amazon Rainforest? Complete the table below to outline each of the causes. Remember to use facts and figures from the revision guide and your own exercise book.

Cause	Information
Subsistence and commercial farming	
Logging	
Road building	
Mineral extraction	
Energy development	
Settlement and population growth	



## Lesson 6 - Impacts of Deforestation

What are the impacts of deforestation?



How does deforestation lead to soil erosion?

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How does deforestation in Brazil contribute to climate change?



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Complete the table below to show how deforestation can have both economic gains and economic losses:

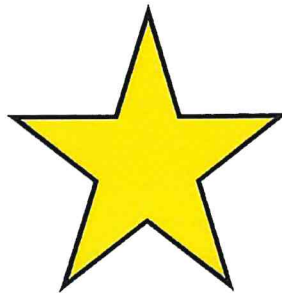
Economic gains for the country	Economic losses for the country



## Lesson 7 - Sustainable Management of rainforests.

### Page 36 - 37 - Tropical rainforests need to be managed to be sustainable

Complete a mind map below to explain why tropical rainforests are valuable to people and the environment:



Page 36 - Page 37 - Rainforests need to be managed sustainably so that we can still use valuable resources but without causing long-term damage for future generations. Complete the table below outlining how rainforests can be managed sustainably - include specific facts where possible:

Sustainable strategies	How do they work?
Selective logging and replanting	
Conservation and education	
Ecotourism	





International agreements	
Debt reduction	

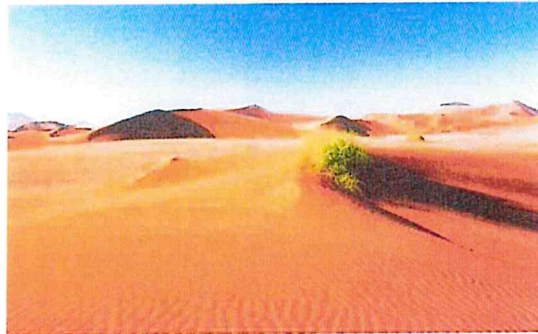


## Lesson 8- Hot Deserts



Page 38 - 41 -Hot desert environments have a range of distinctive characteristics

Pages 38 - 39 - Annotate the photograph below. Include information on their climate, water, soils, plants, people and animals.



Explain interdependence in the desert ecosystem \_\_\_\_\_

How have plants and animals adapted to the physical conditions of these hot environments?  
Give four examples in the table below:



Animal/plant	Adaptation	How does it help it to survive?

How does biodiversity in a desert compare with a tropical rainforest?

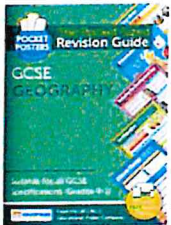
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## Lesson 9 & 10 - A case study of a hot environment: Western desert

### Development of hot desert environments creates opportunities and challenges



In the revision guide it uses different case study for a hot desert. We studied the Western Desert. You will find details below. You should also use extra detail from your exercise book.

Location - Where are hot deserts found globally?

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Describe the location of the Western Desert

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### A case study of a hot environment: Western desert

#### **Development opportunities**

**Farming** - California's Coachella Valley produces lush crops of vegetables, lemons, peppers and grapes (and in turn, a wine industry). Farming is only successful if sufficient supplies of water can be found. Two important sources of irrigation water are:

- 1) aquifers: large stores of water lie beneath some hot desert regions.
- 2) canals: most canals are used for large-scale industrialised agriculture. Farmers are allocated 80 per cent of Colorado water, even though they make up just 10 per cent of the economy.

#### **Mineral extraction**

The Western Desert states are rich in minerals, including copper, uranium, lead, zinc and coal. Copper mining has taken place for centuries in the Sonoran Desert at the Ajo Copper Mine, Arizona. The lack of water discouraged large-scale mining and settlement until underground water was found in an ancient lava flow north of Ajo. Today, opencast mining is carried out on a large scale.

#### **Energy**

Strong energy from the sun (insolation). The Sonoran Solar Project in Arizona is a new solar power plant project that will ultimately produce energy for 100,000 homes and requires 360 workers to help build it.

#### **Tourism**

As US society has grown to have more money and leisure time, tourism has become the Western Desert's most important source of income:

The national parks offer visitors a chance to experience a **wilderness area**. Important areas include the Grand Canyon and



Hydroelectric power (HEP) plants also supply Western Desert communities with some of their electricity.  
Fossil fuels - Today, there are 25 active oil production sites, all of which are on land owned by the Navajo people. More than 100 employees work to produce oil worth US\$50 million.

California's Joshua Tree National Park (named after the dominant plant type). The entire economy of Las Vegas is built around entertainment, attracting 37 million visitors per year.

### Challenges in The Western Desert

#### Extreme temperatures

Temperatures this high are approaching the survival limit of plants, and therefore no provision of food for humans. In Death Valley, temperatures reach up to 50C. No settled population in some areas of The Western Desert

#### Accessibility

Parts of the Western Desert have low population density of less than one person per square kilometre. As a result, huge areas lack surfaced roads. This makes development in these areas very difficult. Tourists and explorers must find their own way, and many get lost.

Some areas of Western Desert can be reached easily. Train stations set up in 1800s, led to development of towns like Las Vegas. This can now easily be reached by road and air.

#### Water Supply

Opportunities in farming and tourism if issues of water storage could be tackled. Colorado River - 2,300km river bringing meltwater from the Rocky Mountains. Water flow very erratic though → huge volumes in summer when snow and ice melts, but low flow between September and April. In 1935, work started on the Hoover Dam. This created Lake Mead which stores two years river flow. Smooths out the Colorado River's flow throughout the year. Water piped along huge aqueducts like \$4bn Central Arizona Project to towns and farm areas. Provides water for farming. 1.4 million acres of land irrigated through Colorado River, producing around 15% of USA's crops and 13% of its livestock. Flooded huge areas of land including important ecosystems and towns.



Complete the table below describing the opportunities in the Western desert:

Mineral extraction	Farming	Energy	Tourism



Similarly, below, complete the table describing the challenges in the Western desert:

<b>Extreme temperature</b>	<b>Inaccessibility</b>	<b>Water supply</b>



**Lesson 11 - Page 41 - Areas on the fringe of hot deserts are at risk of desertification**

What is desertification? \_\_\_\_\_  
\_\_\_\_\_

Annotate the photograph below outlining the causes of desertification (Climate change, population growth, removal of fuel wood, overgrazing, over-cultivation, soil erosion).



Strategies used to reduce the risk of desertification. Give specific examples:

**Water and soil management:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Tree planting**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





**Appropriate technology**

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Do you think hot environments should be protected? In the table below, give two reasons why they should be protected, two reasons why they should not be protected and then your own opinion:

<b>Yes they should be protected</b>	<b>No they should not be protected</b>

**My overall opinion is...**