

## Year 8 Geography - Ecosystems & Biomes

### Key ideas:

What is an ecosystem?

What is a habitat?

How do living things interact with non-living things?

### What knowledge/understanding will you develop?

- To be able to define a habitat and ecosystem with examples
- To be able to describe different types of ecosystems
- To understand the distribution of ecosystems in the world
- To understand how living and non-living things interact
- To develop an understanding of the human impact on ecosystems

### Keywords

Producers	Consumers	Impact	Distribution
Interaction	System	Food chain	Tundra
Tropical	Deciduous	Desert	Adaptations

### What can you use to support your learning?

A series of programmes on BBC Teach:

<https://www.bbc.co.uk/teach/class-clips-video/geography-ks3--gcse-ecosystems-and-biomes/zn7xgwx>

A programme of study & quizzes on BBC Bitesize:

<https://www.bbc.co.uk/bitesize/topics/ztgw2hv>

1

### Tasks to complete so we can assess your understanding:

On SMHW there are a series of tasks for you to use to support your knowledge and understanding – these will be available for the whole half term.

If you need further support or guidance, please email your classroom teacher:

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# Environments And Ecosystems



2

Name: \_\_\_\_\_

Class: \_\_\_\_\_

# Jungle Wordsearch



3

Some of the things hidden in the picture above are also hidden in the wordsearch below...you have been given the first letter of each word to help you:

I	Y	M	F	I	L	S	U	O	K	C
A	E	K	O	L	T	D	A	A	B	T
P	T	K	G	O	R	F	A	O	U	I
R	T	G	A	P	A	R	R	O	T	G
T	A	T	M	N	A	C	U	O	T	E
O	N	M	L	O	S	P	I	D	E	R
H	U	M	M	I	N	G	B	I	R	D
O	E	U	D	M	Z	K	B	O	F	O
I	P	T	O	A	I	A	E	L	L	E
P	T	L	I	R	R	U	R	Y	Y	E
T	E	P	M	N	N	L	D	D	E	N

B\_\_\_\_\_

F\_\_\_\_\_

H\_\_\_\_\_

L\_\_\_\_\_

M\_\_\_\_\_

P\_\_\_\_\_

S\_\_\_\_\_

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# Contents

## Page

2	Jungle Wordsearch
4	Ecosystems
5	How Do Plants Adapt The Their Environments?
6	Andes Ecosystems
7	Food Webs
8	Rainforest Structure
9	The Rainforest Cycle
10	Rainforest Food Web
11	Human Uses Of The Rainforest
12	Sustainable Management Of The Forest



# Ecosystems

Use the words below to complete the sentences

HINT: Cross through the word when you have used it

<b>Woodland</b>	<b>Weather</b>	<b>Sustainable</b>	<b>Species</b>	<b>Soil</b>
	<b>Savannah</b>	<b>Rainforest</b>	<b>Producer</b>	<b>Plants</b>
	<b>Herbivore</b>	<b>Forest</b>	<b>Foodweb</b>	<b>Extinct</b>
	<b>Environment</b>	<b>Ecosystem</b>	<b>Desert</b>	<b>Decomposer</b>
	<b>Deciduous</b>	<b>Coniferous</b>	<b>Carnivore</b>	

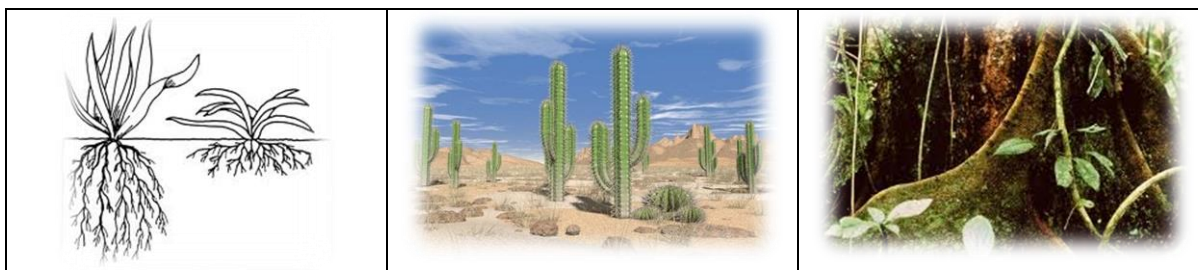
1. A \_\_\_\_\_ is a diagram that shows how animals and plants are linked by eating.
2. When a species dies out it is \_\_\_\_\_.
3. A \_\_\_\_\_ is an animal which eats other animals.
4. Trees which lose their leaves in winter are \_\_\_\_\_.
5. In England there is a famous National Park called The New \_\_\_\_\_, where wild ponies are part of the ecosystem.
6. The scientific name for a type of plant or animals is \_\_\_\_\_.
7. Most plants grow in \_\_\_\_\_.
8. \_\_\_\_\_ includes sunshine, rain and wind.
9. In a \_\_\_\_\_ there are lots of trees growing.
10. A plant makes its own food, so it is called a \_\_\_\_\_.
11. An \_\_\_\_\_ can be any size. It could be as small as a pond or as big as a rainforest.
12. Fir trees are \_\_\_\_\_.
13. A really dry place is called a \_\_\_\_\_.
14. Something that breaks down dead materials is called a \_\_\_\_\_.
15. In the Amazon Basin there is \_\_\_\_\_.
16. Everything around us is our \_\_\_\_\_.
17. Things which grow in the soil and make their own food are called \_\_\_\_\_.
18. A \_\_\_\_\_ is an animals which only eats plants.
19. If people use an ecosystem without damaging it then what they are doing is \_\_\_\_\_.





# How Do Plants Adapt To Their Environments?

Plants grow in places where the climate suits them. Many develop special features to help them cope with the conditions they live in. They adapt to their environment.

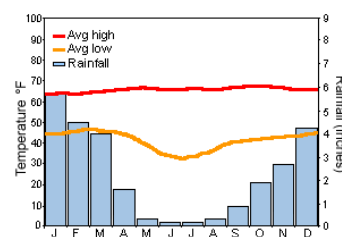
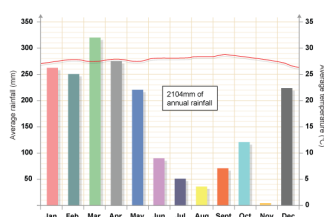
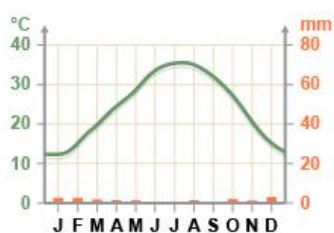


Leaves have become thin spikes so that they won't lose much water. Photosynthesis takes place in the swollen green stem, which can store water.

It needs a lot of sun. It doesn't grow well in shade. But it can survive a dry season because its roots grow deep to find water.

Many plants have tall trunks to reach sunlight. Their leaves have waxy coats, and points called drip tips, to let rain flow off easily

6



Draw a line to match the plant pictures, descriptions and climate graphs.

Which plants grow in the wettest area? \_\_\_\_\_

What helps them cope with the rain? \_\_\_\_\_

Which area is the driest? \_\_\_\_\_

How have plants adapted so they can grow here? \_\_\_\_\_

# Andes Ecosystems

Ecosystems are made up of living and non-living parts. The living parts are the plants, animals and bacteria. While the non-living parts are the climate, rocks, soil and water.

The Andes are a mountain range running down the west coast of South America. They are very high, so it is very cold and often very windy. Temperatures can fall to  $-20^{\circ}\text{C}$ . Some snow on the mountains melts during the day, providing water for plants and animals lower down the slopes. Andean plants include lichen which grows on rock, breaking it up to make soil. Dead lichens and other dead plants provide nutrients for the soil. Plants like mosses, saxifrages and gentians grow behind boulders to shelter from the wind. They have very long roots to anchor themselves in the soil. Animals which feed on these plants include chinchillas and vicuna. Both species have very thick fur for warmth. The chinchilla is quite round in shape, to lose as little heat as possible. There are also carnivores in the Andes. The puma is one example – it hunts the chinchilla and vicuna. The Andean puma is similar to the pumas from the lowlands, but it larger because a bigger volume means less heat



7

To survive plants and animals need to adapt to their environments. Complete the table below to explain why some adaptations are made:

<u>Plants Adaptations</u>	<u>Why Is This Needed?</u>	<u>Animal Adaptations</u>	<u>Why Is This Needed?</u>
Growing behind boulders		Chinchillas are round	
Long roots		Vicuna have thick fur	
Lichen use the nutrients in rocks		Andean pumas are bigger than normal	

What is the climate like?



Where does the water come from?

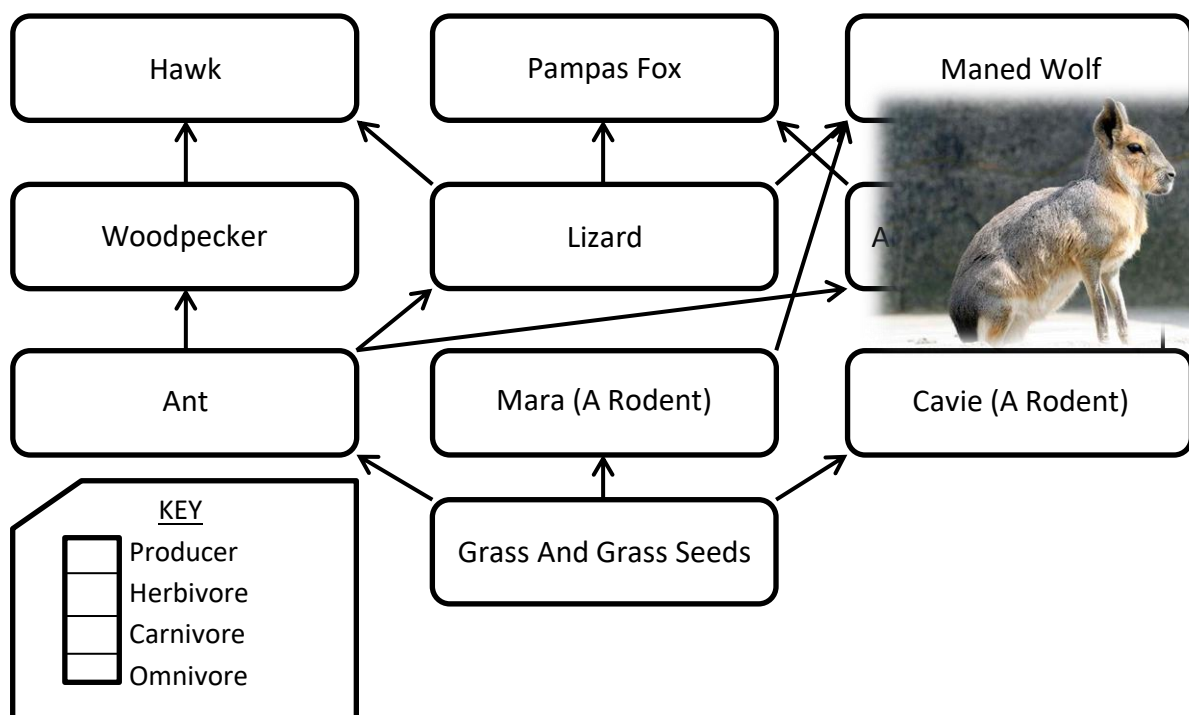
Create a food chain from the Andes:



# Food Webs

In the pampas (grasslands) of South America the climate is just right for grass. Never hot enough to dry all the grass up, or cold enough to stop it growing, and there's rain all year round.

The diagram shows part of a food web in the pampas, which depends on grass for its survival.



*Read through the further facts on the right:*

1. Plants make their own food using sunlight. These are called **producers**. Colour in green the box showing the producer.
2. Using the 'further facts'; add two more arrows from the producer box.
3. Animals which eat only plants are called **herbivores**. Colour of the herbivores in yellow.
4. Animals which eat both plants and animals are called

## Further Facts!

- ◊ Woodpeckers eat grass seeds as well as insects
- ◊ Maned wolves like fruit as well as flesh!

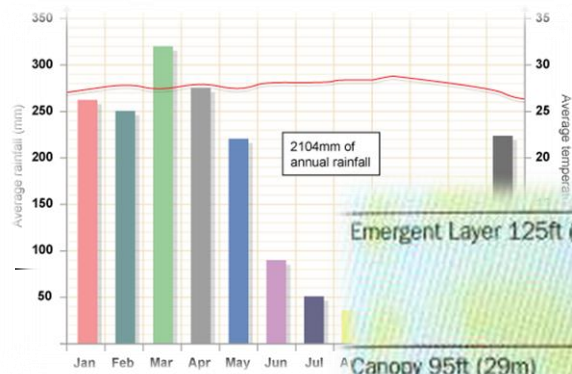




# Forest Structure

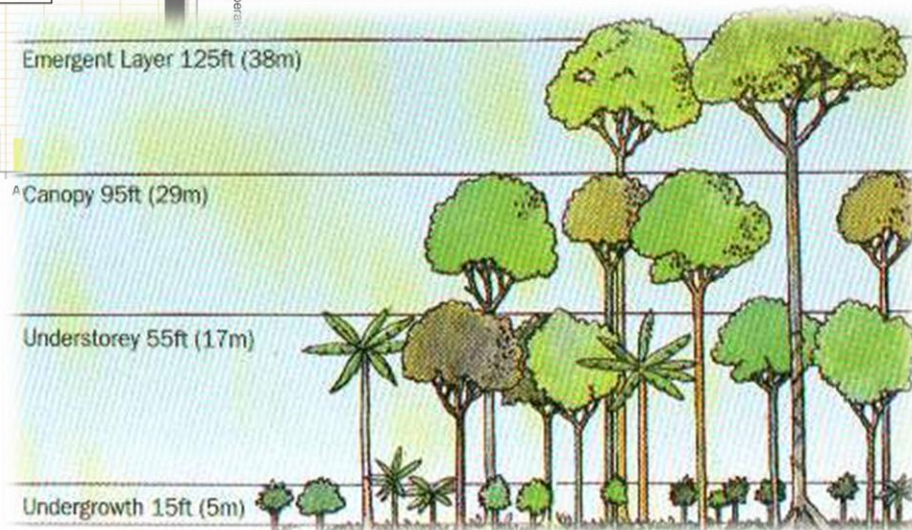
Rainforests are found the near the equator in Central and South America, parts of Africa and Asia. They are hot and humid environments containing the most diverse range and highest volume of plant and animal life found anywhere on earth.

In general it rains virtually every day with the level of rainfall depending on the time of year. The temperature varies throughout the year, but much less than the rainfall.



The graph shows the average rainfall and temperatures in the Amazon Rainforest in Brazil. The rainy season is from December to May. Note how the rainfall varies from

300mm  
50 just  
50mm  
while  
the



temperature only varies by 2°C.

Match the keywords to the descriptions

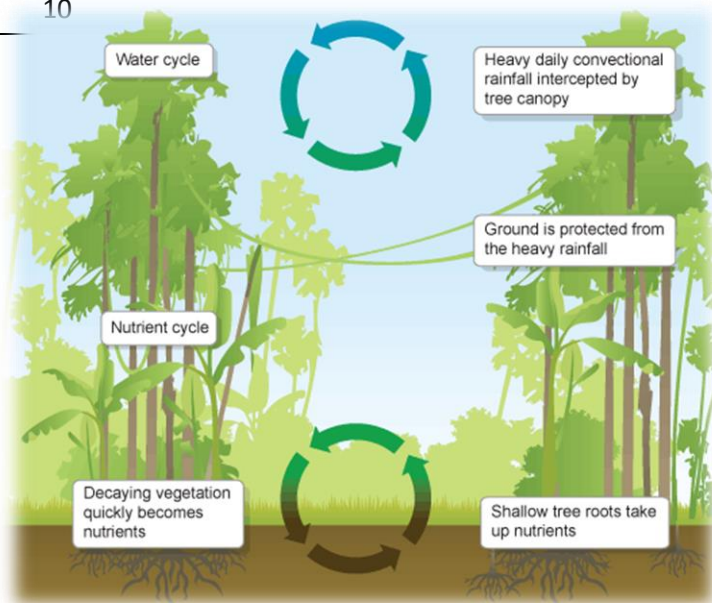
**Lianas**  
**Buttress Roots**  
**Forest Floor**  
**Tree Trunks**  
**Canopy**  
**Emergent**

To support the large trees  
Vine-like planes which clime up large trees  
Grow taller than other trees  
Dark and damp with little sunlight  
A 'sea of leaves' 30 meters above the floor  
Grow straight up to reach the light

## The Rainforest Cycle

The rainforests ecosystem is characterised by heavy rainfall, high humidity, an abundance of lush vegetation and rich nutritious soil. These factors give rise to a unique water and nutrient cycle.

10



### Rainforest Water Cycle:

The roots take the water up from the soil and the rain is intercepted as it falls – Much of it at the canopy level. As the temperature heats up, the water evaporates and forms clouds for the next day's rain

### Rainforest Nutrient Cycle:

The rainforests nutrients cycle is quick. The hot, damp conditions on the ground allow the dead plant material to rapidly decompose. This provides rich nutrients which are absorbed by the plants, however these are in high demand they don't stay in

the soil for long and stay close to the surface. If the vegetation is removed, the soil quickly loses it rich nutrients and can erode away.

### Rainforest Soils:

Due to high iron and aluminium content the soil is red in colour. On the surface there is a thick layer of leaf litter and decomposing organic matter.

So little water reaches the ground because \_\_\_\_\_  
\_\_\_\_\_.

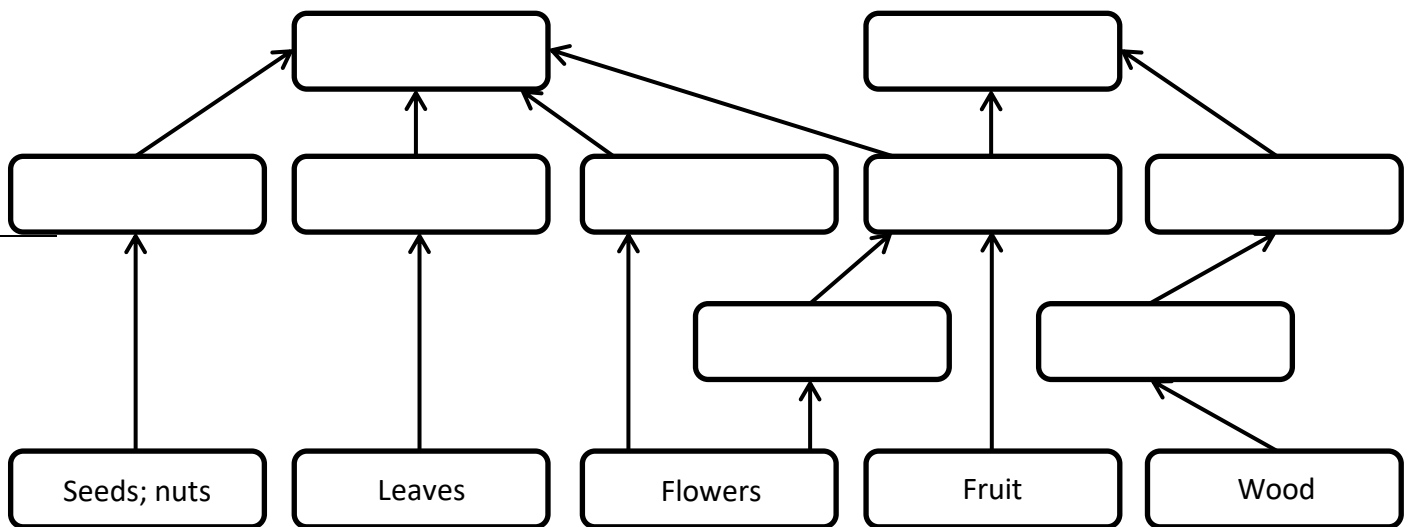
The water under the forests floor doesn't wash away because \_\_\_\_\_  
\_\_\_\_\_.

It rains so much here because \_\_\_\_\_  
\_\_\_\_\_.

The plant material on the ground decomposes quickly because \_\_\_\_\_  
\_\_\_\_\_.

The soil is a rich colour because \_\_\_\_\_.

## Rainforest Food Web



**Tiger** – One of the largest members of the cat family. Hunts for prey both in the canopy and on the forest floor



**Sloth** – Hangs from branches by its long, curved claws. Feeds on leaves.



**Hummingbirds** – Long, curved beak probes inside flowers for nectar. Wings make a humming noise during flight. Hovers in mid-air while feeding on nectar



**Monkey** – Feeds on fruit, sap from trees and other small animals



**Parrots** – Strong beak can crack open seeds and nuts. Claws are also used to covey food in to the mouth



**Termites** – Feed on dead wood and other plant matter



**Ant-Eater** – Long tongue licks up termites and other insects



**Eagle** – A bird of prey. Hooked beak rips the prey apart. Strong claws rip and tear food e.g. monkeys, sloths, bats and parrots



**Butterflies** – Feed on nectar. Have patterns on the wings may camouflage the butterfly or warn that it may taste unpleasant

# Human Uses Of The Rainforest

It's been estimated rainforests once covered 14% of the earth's surface but this has reduced

Use the pictures and descriptions to complete the food web.



Create your own key to highlight which are producers, herbivores, carnivores and carnivores. (You can check these meanings on page seven)

This is called deforestation. Not only wildlife destroyed but erosion and flooding occur too.

Read through the statements below. Complete the key to show which you think are **positive** impacts and which are **negative**:

<b>Transportation</b> Better transportation means easier access to raw materials like minerals and timber. Forest resources can be transported away and sold	<b>Infrastructure</b> Hospitals and education can be improved from the money gained from selling natural resources	<b>Roads</b> These divide up parts of the forest and can cut off connections between different systems.
<b>Profits</b> Selling resources can be used to improve a country's infrastructure	<b>Land Clearance</b> Farming, transportation and mining can lead to deforestation. Hardwood tree take many years to grow so can be difficult to replace	<b>Fertile Soils</b> That make farming possible are quickly washed away when the forest is cleared. If soil ends up in rivers it can lead to flooding
<b>Raw Materials</b>	<b>Loss Of Animals Habitat</b> This occurs when trees are cut down. Deforestation	<b>Mineral Deposits</b>



Tropical hardwoods such as ebony and mahogany, can be sold for a good price abroad	can result in endangering animals and plant life, or even lead to them becoming extinct	The Amazon includes bauxite, iron ore, manages, gold, silver and diamonds
<b>Large-Scale Farming</b> Brings money into the country and provides food and jobs for the country's growing population	<b>Profits</b> From large-scale farming and selling resources often go back to rich country's or large companies and don't benefit the rainforest	<b>Small-Scale Farming</b> Provides food for rainforest communities and the landless poor of Brazil
	<b>Amazonian Indians</b> Five years ago there were an estimated ten million tribesmen living in the rainforest, today there is estimated only 200,000	

Design your own key to show which of the above is

Social

Political

Economic

# Sustainable Management Of The Forest

13

Brazil needs to use the Amazon's resources to develop, so leaving it untouched is not a realistic option.

Uncontrolled and unchecked exploitation can cause irreversible damage such as soil erosion, flooding and climate change. So, sustainable use of the forest is essential. Sustainable development will meet the needs of Brazil's population without compromising the needs of future generations.

Possible strategies include:

- ◊ Agro-forestry - growing trees and crops at the same time. This lets farmers take advantage of shelter from the canopy of trees. It prevents soil erosion and the crops benefit from the nutrients from the dead organic matter.
- ◊ Selective logging - trees are only felled when they reach a particular height. This allows young trees a guaranteed life span and the forest will regain full maturity after around 30-50 years.
- ◊ Education - ensuring those involved in exploitation and management of the forest understand the consequences behind their actions.
- ◊ Afforestation - the opposite of deforestation. If trees are cut down, they are replaced to maintain the canopy.



- ◊ Forest reserves - areas protected from exploitation.
- ◊ Monitoring - use of satellite technology and photography to check that any activities taking place are legal and follow guidelines for sustainability.

Write a report on which of these strategies will work best to protect the rainforest and why.  
Which of these do you think will not work?

Think about the time it would take for these strategies to be put in place, the outside help needed and resources