

Ecosystems, TRF

Adaptations to the TR environment	
Plants	<ul style="list-style-type: none"> -The leaves of many trees are waxy and have tips that allow water to run off them. -Leaf stems are also flexible to allow leaves to move with the sun to maximise photosynthesis. -Therefore, vegetation copes with heat and heavy rainfall by: using the circulating water as a sort of cooling system; passing water to the soil or returning it to the atmosphere; having leaves that can cope with large amounts of water falling on them. - Buttress roots have massive ridges that help support the base of small trees and help transfer water. May also help oxygen/ carbon dioxide exchange by increasing the surface area.
Animals	<ul style="list-style-type: none"> -Many animals use camouflage to escape becoming prey, and predators use it to help them catch their prey. -Some animals are poisonous and use bright colours to warn predators to leave them alone. There are several species of brightly coloured poisonous arrow frogs. - Because there are so many animals there is a great deal of competition for food. Some animals are very specialised and live off a specific plant or animal that few other eat. For example, parrots and toucans have developed big strong beaks to crack open hard nuts.

Key terms		World Ecosystems – Biomes (describe features of each) Where are they found – what are the areas like?	
Ecosystem	A community of plants and animals that interact with one another and their physical environment.	Deserts	<ul style="list-style-type: none"> -Deserts cover one fifth of the worlds land surface. -Found roughly 30 degrees north and south of the equator. -The air that rises over the equator heads polewards after shedding its moisture as rain. -The suns rays are still highly concentrated at this low latitude -Combined with the dry air, this brings arid desert conditions to places like the Sahara and Australia.
Biotic	Relating to living things.		
Abiotic	Relating to non-living things.		
Producer	An organism that is able to absorb energy from the sun through photosynthesis.		
Consumer	A creature that eats herbivores and/or plant matter.	Tundra	<ul style="list-style-type: none"> -Found at the Arctic circle, where the suns rays have little strength. -Temperatures are below freezing for most of the year. -Only tough, short grasses can survive, often in waterlogged conditions (due to surface ice thawing).
Decomposer	An organism such as bacterium or fungus, that breaks down dead tissue, which is then recycled into the environment.		
Food chain	Shows the direct links (hence the term 'chain') between producers and consumers in the form of a simple line.		
Food web	Shows all the connections between producers and consumers in a rather more complex way (hence the term 'web' rather than 'chain').	Deciduous forests	<ul style="list-style-type: none"> -These grow in many places at higher latitudes. -Found in western Europe, where rain-bearing storms arrive regularly thanks to the jet stream, and the east coasts of Asia, North America, and New Zealand. -The suns rays are weaker at this latitude.
Deforestation	The chopping down and removal of trees to clear an area of forest.		
Conservation	Managing the environment in order to preserve, protect or restore it.		

How can rainforests be managed sustainably? (minimum 3 strategies)	<p><u>Conservation and education</u> - Rainforest can be preserved in conservation areas, such as national parks or nature reserves. These areas can be used for education scientific research and tourism. Recently, large international businesses have supported conservation projects in exchange for carrying out scientific research or the provision of raw materials.</p> <p><u>Ecotourism</u> - Some countries like Costa Rica, Belize and Malaysia have promoted their forests for ecotourism. Ecotourism aims to introduce people to the natural world, to benefit local communities and protect the environment for the future. Through income generated by ecotourism local people and governments benefit from retaining and protecting their rainforest trees. This is a more sustainable option than cutting them down for short term profit.</p> <p><u>International Agreements</u> - Rainforests are now understood to be of global importance. They absorb carbon dioxide from the atmosphere, releasing oxygen and maintaining levels of humidity. International agreements have been made to help protect rainforests.</p>
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Epping Forest Ecosystem, UK	
Key Facts	
<ul style="list-style-type: none"> -Located east of London. -Epping Forest is all that remains of a larger forest that colonised England at the end of the last Ice Age. -Bogs and ponds in the forest have their own unique species, including 20 types of dragonfly. - For 1000 years, Epping Forest has been managed in numerous ways; as hunting grounds for royalty, a timber resource, and nowadays recreation. 	
What are the characteristics of Epping Forest's food web?	
<ul style="list-style-type: none"> -Biodiversity in the forest has remained naturally high thanks to careful management, so there is a complex food web composed of thousands of species. -Epping forest is home to: <ul style="list-style-type: none"> -A large number of native tree species (oak elm, ash and beech). -A lower shrub layer of holly and hazel at five meters, overlying a field layer of grasses, brambles, fern and flowering plants. 177 species of moss and lichen grow here; altogether a great diversity in producer species. - Many insect, mammal and bird consumer species are supported, including nine amphibian and reptile species and 38 bird species. -Studies have found 700 species of fungi which are important decomposers. 	
How is the ecosystem interdependent?	
<ul style="list-style-type: none"> -The forests producers, consumers and decomposers are all interdependent. This is most clearly shown by the annual life cycle of trees. -Most of the trees are deciduous, meaning they lose their leaves in Winter (winters are darker and cooler than summers; this is an adaptation to the UK's seasonal climate). -As a result trees grow broad green leaves in Spring, allowing them to maximize photosynthesis during the summer. They shed their leaves in the autumn, and so conserve energy during their Winter. -By mid-autumn the forest floor is covered with a thick layer of leaves. -By spring this leaf litter has disappeared: the decomposers work is now complete. -Nutrients stored in the leaves are converted into humus in the soil, ready to support the new seasons plant growth. -This will in turn support the new seasons plant growth, ultimately including the fruits and berries that, in turn, support many primary consumers. -Nutrient Cycling therefore demonstrates clearly the interdependence of plants, animals and soil. 	

Tropical rainforests	
Where are TR found?	<ul style="list-style-type: none"> -Tropical rainforests are found in a broad belt through the Tropics in: <ul style="list-style-type: none"> -Central and South America -Central Africa -South East Asia -Northern Australia
Environmental characteristics of rainforests (Climate/ Vegetation/ Soils)	<p><u>Climate</u> – Because TR occur on or close to the equator, the climate is typically warm and wet.</p> <ul style="list-style-type: none"> -Annual temperatures average around 26 degrees Celsius, and show little variation from day to day or month to month. -Annual rainfall usually exceeds 2,500mm. This abundant supply of water feeds the huge rivers such as the Amazon in Brazil. <p><u>Vegetation</u> – TR are renowned for their rich vegetation cover.</p> <ul style="list-style-type: none"> -Particularly spectacular are their very tall trees (30-45m in height). <p><u>Soils</u> – Soils of the TR mainly thin and poor. The rapid recycling of nutrients provides the conditions for luxurious vegetation to grow.</p>
Causes of deforestation (Explain at least 3 causes)	<ul style="list-style-type: none"> - <u>Logging</u>: This is the first step in the conversion of forest land to other uses. -Selective logging – Timber companies interested in specific trees to sell them to other countries to make furniture (i.e. Mahogany, Teak). -Clear felling – when vast areas of rainforest are cleared in one go. -<u>Mineral Extraction</u>: Some of the minerals that developed countries need are found beneath stretches of the TR. -In the Amazon, mining is mainly about Gold. Today around 50,000 hectares of the Amazon are used for gold mining. -The rainforest suffers badly as it is clear felled. -<u>Energy Development</u>: An unlimited supply of water and ideal river conditions have encouraged dams to be built to generate hydroelectric power (HEP). -This involves flooding vast areas of rainforest. -Often the dams have a short life. The submerged forest gradually rots, making the water very acidic. -This then corrodes the HEP turbines. The dams also become blocked with soil washed down deforested slopes by heavy rain.
Impacts of deforestation (Explain at least 3 impacts)	<ul style="list-style-type: none"> -<u>River Pollution</u>: During gold mining, the mercury used to separate gold from the ground is allowed to enter the rivers. Fish are poisoned, as well as people living in nearby towns. Rivers also polluted by soil erosion. -<u>Decline of indigenous tribes</u>: Many indigenous people have been forced out of the rainforest by the construction of roads, logging, mining etc. Many end up in towns and cities where they cannot adjust, resulting in addition to alcohol and many young deaths. With the loss of these tribes has also gone centuries of detailed knowledge of the forest, such as various rainforest species. -<u>Conflicts</u>: Disputes between loggers and other developers of the rainforest often end in open conflict. -Disputes arrive because people have conflicting views about the TR, for example between conservationists and developers.

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Animals					
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Ecosystem		Deserts			
Biotic					
Abiotic		Tundra	How is the ecosystem interdependent?		
Producer					
Consumer		Deciduous forests			
Decomposer					
Food chain			Causes of deforestation (Explain at least 3 causes)		
Food web					
Deforestation			Impacts of deforestation (Explain at least 3 impacts)		
Conservation					
How can rainforests be managed sustainably? (minimum 3 strategies)					