

RAINFORESTS



*WHY THEY'RE IMPORTANT AND WHAT
YOU CAN DO TO HELP*



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RAINFOREST FACTS

TROPICAL RAINFORESTS - WHERE AND WHAT ARE THEY?

Tropical rainforests cover approximately 8% of the world's land surface - an area of approximately 1.2 billion hectares - and yet contain over half of the earth's species of animals and plants. The largest rainforest, the Amazon, is found in South America and spans nine nations (Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana and Suriname, as well as French Guiana), covering a total area of approximately 600 million hectares.

Tropical rainforests are found across the world between the Tropic of Capricorn and the Tropic of Cancer, 22.5° North and 22.5° South of the Equator. Almost half of the remaining tropical rainforest is found in tropical America, a bit more than a third in Asia and Oceania, and fifteen percent in Africa. The areas where rainforests occur experience a constant climate with high temperatures averaging 25°C all year round, an average annual rainfall of at least 2 metres, and up to 100% humidity. Some rainforests get as much as 10 metres of rain per year!

The rainforest canopy is divided into four main layers: the **emergent layer** consists of the tallest trees (emergent trees) which can grow to heights of 70m. These trees act as a buffer, sheltering the lower trees from heavy rains. Beneath this layer is the **main canopy** of smaller trees which are intertwined with climbing vines and hold flowering plants, called epiphytes, on their branches. Below this is the **understorey** containing young saplings and shrubs. The final layer, the dark **forest floor** contains only a few plants as only 2% of the sunlight reaches this layer of the forest, making it difficult for plants to grow.

There are three main types of rainforest: lowland, montane and mangrove.

Lowland rainforest

This type of forest is found at elevations of up to 1000 feet within the tropical belt. Due to the high rainfall and constant warm temperatures, they provide the perfect environment for plants and animals and so contain a great diversity of life. Lowland rainforests contain the tallest trees of all the types of rainforest, with the largest variety of species.

Montane rainforest

Otherwise known as cloud forest, montane rainforests are found in mountainous areas, which lie within the tropical belt. At altitudes of between 1000-3000 feet (lower montane) and 3000-10000 feet (upper montane) these forests are often cooler than lowland rainforest and are almost constantly dripping with moisture from the swirling clouds which engulf them. The trees in cloud forests do not grow so high as in lowland rainforest due to the cooler temperatures, but there are more ferns and epiphytic plants as these plants like moisture.

Mangrove forest

Found in coastal areas, mangrove forests like saltwater and can tolerate periods of drought in the dry season. Mangrove trees can reach heights of 80 feet and are supported by stilt-like roots which raise the tree above the water. Mangrove forests provide shelter for wildlife in coastal waters and river systems, and help to aerate and cleanse the water. Unfortunately, vast areas of this coastal forest are removed to make way for shrimp farms which supply foreign markets such as ours.

WHY ARE RAINFORESTS SO IMPORTANT?

Plants and animals

Tropical rainforests took between 60 and 100 million years to evolve and are believed to be the oldest and most complex land-based ecosystem on earth, containing over 30 million species of plants and animals. That's half of the Earth's wildlife and at least two-thirds of its plant species!

Because most tropical rainforest grows in warm and steamy environments, it contains a huge variety of plants. One hectare of lowland rainforest may contain 1000 trees with up to 300 species. Compare this to the UK's forests which are likely to have only 5-10 species per hectare: that's 30 to 60 times more species in a hectare of rainforest! These plants in turn provide food and shelter for many rare animals that depend on the rainforest for their survival. There are many more thousands of rainforest plants and animals species still waiting to be discovered.

Climate

Rainforests store water like a huge sponge. In fact, it is believed that the Amazonian forests alone store over half of the Earth's rainwater! Rainforest trees draw water from the forest floor and release it back in to the atmosphere in the form of swirling mists and clouds.

Without rainforests continually recycling huge quantities of water, feeding the rivers, lakes and irrigation systems, droughts would become more common, potentially leading to widespread famine and disease.

Did you know that we also depend on trees to cleanse our atmosphere? They absorb the carbon dioxide that we exhale, and provide the oxygen we need to breathe. When rainforest trees are burnt they release carbon dioxide, which pollutes the atmosphere and is believed to contribute to global warming.

Even though we depend on trees in this way, we are still removing forests from the planet at a faster rate than they can grow back.

Prevention of soil erosion

Surprisingly, soil in the rainforest is very poor in nutrients. This is because the nutrients are stored in the vast numbers of trees and plants rather than in the soil. Tree roots bind the soil together, while the canopy protects the soil from heavy rains. When a tree dies and its trunk falls to the forest floor, it decays and the nutrients it contains are recycled. However, if trees are removed from the forest, the nutrients are removed with it, along with the protection provided by the tree roots and the forest canopy. The unprotected soil is then simply washed away in heavy rains, causing blockages and floods in lowland rivers, while leaving upland rivers dry.

Home for indigenous people

Many indigenous people have been living in harmony with the rainforest for thousands of years, depending on it for their food, shelter and medicines. When oil and logging companies come to remove vast areas of forest, they bring diseases which the indigenous people have no resistance to, threatening their survival. Often they are also forced to move away from their homes to unfamiliar places, sometimes even being killed in the process.

Rainforest pharmacy

It may surprise you to know that more than 25% of our modern medicines originate from tropical forest plants. Even so, we have only learned how to use 1% of these amazing plants, so imagine the possibilities if we could experiment with the other 99%!

For example, the **rosy periwinkle**, found in Madagascar, is used to cure leukemia, while the anti-malarial drug **quinine** is taken from the bark of the Andean **cinchona** tree. The **rauvolfa** shrub found in Asian and African forests is used to cure high blood pressure and mental illness. Rainforests and the native populations who discovered these medicines could hold the cure to many more diseases if we would only nurture the forests and allow their people to show us.

Other important forest products

Many foods we consume today such as nuts, bananas, coffee and spices, and industrial products such as rubber, resins and fibres, were originally found in tropical rainforests.

WHY ARE RAINFORESTS BEING CUT DOWN?

In the past 50 years much of the rainforest in Africa and Asia has been destroyed. It is estimated that 1% of rainforests (areas approximately the size of England and Wales) are being cut down every year – the equivalent of four football pitches every minute. Unfortunately this means that there is a very high rate of extinction, as the wildlife depending on the forest dies with it.

The principal reasons why rainforests are being destroyed are explained below:

Cattle ranching

Many rainforests in Central and South America have been burnt down to make way for cattle farming, which supplies cheap beef to North America, China and Russia. It is estimated that for each pound of beef produced, 200 square feet of rainforest is destroyed. In the past 20 years Costa Rica has lost the majority of its forests to beef cattle ranching. This is known as slash and burn farming and is believed to account for 50% of rainforest destruction. However, the land cannot be used for long: the soil is of poor quality and, without the forest, quickly becomes very dry. The grass often dies after only a few years and the land becomes a crusty desert. The cattle farmers then have to move on and destroy more rainforest to create new cattle pastures.

Indigenous Indians also use “slash and burn” farming techniques, but on a small scale. For centuries they have used a sustainable system where, when they finish using one small patch of land, they move away to a different area and allow the forest to regenerate. Since the area cleared is small, the soil does not dry out and therefore the forest clearance is localized and temporary rather than extensive and permanent.

Logging

This is believed to be the second largest cause of deforestation. Timber companies cut down huge trees such as mahogany and teak and sell them to other countries to make furniture. Smaller trees are often used for the production of charcoal. Vast areas of rainforest are cut in one go (clear felling) and the most valuable trees are selected for timber, leaving the others for wood chipping. The roads that are created in order to cut and remove the timber often lead to further damage: see the effect of forest roads under “Oil Companies”.

Agriculture

Much of the fruit, cereals and pulses we buy from tropical countries have been grown in areas where tropical rainforests once thrived. The forests are cut down to make way for vast plantations where products such as bananas, palm oil, pineapple, sugar cane, tea and coffee are grown. As with cattle ranching, the soil will not sustain crops for long, and after a few years the farmers have to cut down more rainforest for new plantations.

Mining

The developed nations relentlessly demand minerals and metals such as diamonds, oil, aluminium, copper and gold, which are often found in the ground below rainforests. The rainforests therefore have to be removed in order to extract them. Poisonous chemicals are sometimes used to separate the waste from the minerals, for example mercury, which is used to separate gold from the soil and debris with which it is mixed. These chemicals often find their way into rivers, polluting water supplies which local people depend on, killing fish and other animals that feed on them.

Oil Companies

Rainforests are seriously affected by oil companies searching for new oil deposits. This is incredibly damaging as often large roads are built through untouched forests in order to build pipelines and extract the oil. This encourages settlers to move into hitherto pristine forests and start slash-and-burn farming or cutting more timber for sale or the production of charcoal.

Once established, the oil pipelines which transport the oil often rupture, spouting gallons of oil into the surrounding forest, killing wildlife and contaminating the water supplies of local villages.

Dams

The World Bank and large companies invest money in developing countries to build dams for the generation of electricity. This can involve flooding vast areas of rainforest. Dams built in rainforest areas often have a short life because the submerged forest gradually rots, making the reservoir water acidic, which eventually corrodes the dam turbines. The dams can also become blocked with soil washed down from deforested highlands in heavy rains. This can cause great problems, such as flooding.

Below are shown just a few of the wonderful rainforest animals whose home is at risk (All photos by Pete Oxford).



Caiman

"Caiman" is a Spanish word for an alligator or any crocodylian species. There are 5 species of caiman, all living in the Americas. The principal threats to their survival are hunting for their skin and habitat loss.

(Black Caiman *Melanosuchus niger*)

Did you know?

The most common caiman, the Spectacled Caiman, can change colour like a chameleon! It gets its name from the ridge between its eyes, which makes it look as though it is wearing glasses.



Jaguar (*Panther onca*)

The majestic Jaguar is the largest cat on the American continent and, like most cats, they are solitary animals that need large territories to survive. Therefore large areas of land must be designated as refuge areas where they can be completely protected from habitat loss,

hunting and competition with agriculture.

Did you know? The word "jaguar" comes from the word "yaguara", which in Guarani (the languages of the Guarani Indians in South America) means "beast that kills with one leap."

Macaws

Macaws are the largest members and amongst the most threatened of the parrot family, largely due to their popularity as pets and the destruction of their habitat. There are 17 species of macaw, but 5 species have already become extinct. Macaws can live for more than 60 years.



Did you know?

Macaws are famous for gathering in huge flocks at "clay licks" to eat clay. This is because many of the fruits and seeds they eat are poisonous, and clay absorbs the toxins, preventing the birds from getting sick.

Tapir

There are 4 species of tapir: 3 in Central and South America and 1 in Southeast Asia. This Asian species, the Malayan Tapir, is the largest of the 4 species. All are endangered due to habitat destruction and overhunting.



(Brazilian Tapir *Tapirus terrestris*)

Did you know?

Tapirs have hardly changed in appearance over the last 20 million years!



Spectacled Bear (*Tremarctos ornatus*)

This species is confined to the Andes mountains and is found in habitats ranging from dry coastal desert and treeless alpine areas to rainforests. This South American bear is a vegetarian, and like the Jaguar, requires large areas of forest to survive. Habitat destruction and hunting for its meat and fur are the principal threats to its survival.

Did you know? The Spectacled Bear is the closest living relative of the Giant Panda.



Red Howler Monkey (*Alouatta seniculus*)

The only animal that is louder than a Howler Monkey is the Blue Whale! Howlers make eerie calls before dawn and can be heard up to 3 miles away.

Howler Monkeys

Howler Monkeys are the largest monkey in the Americas. There are 9 species and they live in Brazil, Argentina, Paraguay and Bolivia. Like most other tropical mammals, the primary threat to these rainforest-dwelling animals is habitat destruction.

Did you know?

The only animal that is louder than a Howler Monkey is the Blue Whale! Howlers make eerie calls before dawn and can be heard up to 3 miles away.



Hummingbirds

These tiny nectar-eating birds all live in the Western Hemisphere. There are 338 species of hummingbird, half of which live in the tropics. This means that many species depend directly on rainforests for their survival. Hummingbirds

range in size from the Bee Hummingbird which weighs just 1.95g, to the 20g Giant Hummingbird.

Did you know? Some species of hummingbird can beat their wings at an astonishing 80 beats per second, and they are the only bird that can hover and fly backwards!



Giant Otter (*Pteronura brasiliensis*)

Giant otters are endemic to South America and live in slow-moving rivers, lakes and swamps. They can grow to 2 metres in length and have no natural predators, but are at risk from habitat loss and water pollution from mining activities. There are only an estimated 2000 to 5000 left in the wild.

Did you know? The Giant Otter is known locally as "River Wolf".

Sloths

There are 2 types of sloth, the two-toed and the three-toed. There are 5 species, all of which live in dense primary tropical rainforest, which means that the sloth's main threat is habitat destruction. However, it is also threatened by the meat, fur and pet trades. It is the slowest mammal on earth! Despite barely being able to walk on the ground, surprisingly sloths are strong swimmers.

Did you know? The sloth's hair runs from its belly to its back, the opposite direction from other animals, due to spending most of its life upside down!



(A species of Three-toed Sloth)

HOW CAN YOU HELP SAVE THE RAINFOREST?

YOU CAN SPONSOR YOUR OWN ACRE OF TROPICAL RAINFOREST!

If you would like to become involved in rainforest conservation then why not sponsor your own acre of tropical rainforest? This will help us to save the lives of thousands of trees and plants as well as the animals that depend on these forests for their survival.

It costs £50 to sponsor one acre of rainforest and in return we will send you a certificate recording your sponsorship to hang in your classroom or at home. We will also keep you updated with our progress through our newsletter Rainforest Review. We are looking forward to hearing from you!

FUNDRAISING IDEAS

Below is a compilation of fundraising ideas -tried and tested and tremendously successful!

- Non-uniform day: students pay for the privilege and the proceeds go towards rainforest conservation.
- Home made cake and biscuit sales and brick-a-brack stalls held during break times, or in the evening for parents.
- One school even decorated their classroom and called it the 'Tropical Island'. They covered the ceiling with netting and interwove it with vegetation, insects and animals made from paper to create a canopy effect. Parents were then invited to view the rainforest classroom for themselves for a small fee. Tropical fruit punches and rainforest-themed cakes were also on sale.

- Egg decorating, egg hunts and rolling competitions, which is excellent fun at Easter time.
- Coin collections appealing to parents and local businesses especially (please note that there are certain legalities which must be considered when collecting from the public).
- Compile a booklet of rainforest poems and stories written by each member of the class and sell them to parents.
- Hold an evening of rainforest dance, poetry and song and invite parents along.
- Sponsored events (all of which could be carried out on school grounds:

Roller Disco

Run

Forest Walk

Supermarket trolley push around your local town?!

Cycle

Silence, where individuals are paid by the hour (day time only!).

Read – how many books can you read in a week?

Litter pick-ups: these are easy to arrange and can even involve the wider community.

Welly (wellington boots) throwing

Custard baths

Jelly sculptures

Belly dancing

Sponsored smiling?

- Last but not least the sixth form slave auction where the older students of the school put themselves up for auction and are 'sold off' for the day to the highest bidder. The 'slaves' are then at the mercy of their masters, running errands etc.

The list is endless and raising money can be a great character building exercise not to mention all the fun involved! Good luck with any event you may organise and let us know of any successful new ideas you have.

OTHER WAYS TO HELP THE RAINFOREST

There are lots of other things you can do that will make a difference to the world's rainforests, as well as your local environment: below are listed a few of them. You will be surprised how your choices in a local shop or supermarket can affect forests halfway across the world! And remember that it is just as important to look after your local wildlife and environment as it is to save rainforests. Try to persuade your family and friends to join in too.

Shopping

When you go shopping, try to buy things that come in recycled packaging, or with as little packaging as possible.

- Don't forget to **REUSE** your shopping bags: plastic is made from oil, which comes from beneath the ground. Oil mining can destroy forests, and not only this: plastic is not biodegradable (it does not decompose) and so will lie around in ever-growing landfill sites for hundreds of years.
- Aluminium that makes drinks and food cans also has to be mined, and like oil mining, this can destroy forests.
- Don't forget that trees have to be cut down to make paper, so try to buy recycled paper and products in recycled cardboard packaging.

Also, try to look for products that give more consideration to the environment. For example:

- **organic** foods: these are produced without use of harmful chemicals that can damage wildlife;
- **locally grown** foods: this will save pollution and energy used to transport food to your local shop;

- **fairly traded** products: this will support producers in developing countries, providing them with a more secure income;
- “**shade-grown**” coffee, tea and cocoa: this method provides better support to wildlife, as these products are grown underneath trees rather than where trees have been cut down;
- foods such as **Brazil nuts** and **vanilla** which need their native tropical forests to grow. Supporting the trade of these products will encourage the local people to protect their forests in order to sustain this trade and provide them with an income.

There are products that you should AVOID, such as:

- products containing **palm oil**. Huge areas of rainforest in Southeast Asia are being destroyed to make way for palm oil plantations, threatening many animals including the beautiful, intelligent and critically endangered orang utan. The problem is also increasing in Latin America. Did you know that 1 in 10 products on supermarket shelves contains palm oil? Have a look at the label before you buy!
- **tropical wood or wood-based products** such as mahogany, ebony or teak, as it probably comes from rainforests. If it can't be avoided, then look for **recycled** or **second-hand** products or wood with the FSC (Forest Stewardship Council) logo. The FSC makes sure that the wood it approves comes from sustainable sources and does less damage to wildlife habitats. Tell your parents too!
- products containing dangerous chemicals or **solvents**: look for water-based paints, glues and varnishes instead as these do less damage to the environment.

Recycling

Recycling services are improving quickly: in many places, paper, glass, aluminium (drinks and food cans), kitchen and garden waste and plastic bottles are now collected from your house or school just as your rubbish is collected.

Even if they aren't, there are usually recycling banks in towns and cities where you can take them. In some areas you can even recycle plastic packaging. Clothes, shoes, old books and toys can also be recycled by giving them to a charity shop or to your younger brothers or sisters. Remember, 80% of household waste is actually recyclable!

If you don't have recycling at school, talk to your teachers and try to persuade them to arrange it: it's not difficult! You can also help by making sure you don't waste paper and by always using both sides of a piece of paper: why not keep a store of scrap paper in your classroom or at home from one-sided photocopies or print-outs that you don't need any more? You can also recycle printer cartridges and help Rainforest Concern at the same time: just contact us and we'll arrange it for you.

Travelling

Try to walk or cycle to school instead of going in the car. If your school is too far away to do this, then take public transport instead. This will save petrol, which is made from oil and comes from below the ground and so, like plastic, can cause the destruction of rainforests. It also causes pollution when it is used (by releasing poisonous gases) and contributes to global warming: when petrol and other fossil fuels are burned, carbon dioxide is released which heats up the earth's atmosphere.

Encourage friends and family to use their cars less too, especially for short journeys. You will all be helping the planet as well as getting fit!

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CLASSROOM AND HOME ACTIVITIES

- All of the animals described in this booklet live in Central and South American rainforests. Can you find out what animals live in rainforests in other parts of the world?
- Why not draw us a picture of your favourite rainforest animal, or write a poem or story about it? We are always pleased to see your creativity!
- Go outside into the playground or park and look for fallen leaves of different colours, sizes and textures. Autumn is an especially good time to do this! Then take them back to the classroom or your home and make a picture of the rainforest or different animals with them, cutting the leaves into different shapes if you need to. You could also use the leaves to make prints using different coloured paints. Think of other ways to use the leaves in your picture. If you make a big picture collectively with your class you can use it to decorate your classroom.
- Write about why it is important to save the world's rainforests. You can include things you have learnt and use your imagination to think of other reasons. What cures or discoveries do you think could lie in the depths of the forest?
- How about getting a compost bin at school (if you have any green space in your school grounds) or at home in which to put all your vegetable and fruit peels, apple cores, tea bags, egg shells, grass cuttings, other garden waste and any confidential papers that your parents or teachers don't want to put in the recycle bin? Some local councils will deliver a compost bin to your door if you request one. "Minibeasts" such as worms and woodlice will turn all your waste into compost, which can be used for planting flowers and trees. Don't underestimate how clever those little creatures are!

RAINFOREST BOOK LIST

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