

Fact sheet

Why rainforests matter

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1. Why do rainforests matter?

Tropical rainforests are of value because of their

- amazing natural habitat
- contribution to the Earth's climate and the way we live.

2. Where are they?

A few thousand years ago tropical rainforests covered as much as 12% of the Earth's land surface today they cover less than 5%. They lie between the Tropic of Capricorn and the Tropic of Cancer. Over a third of all remaining tropical rainforest is found in the Amazon basin in South America, 20% in Africa, chiefly in the Congo basin, 20% in Indonesia and the remainder split into smaller areas. In total, over 80 tropical countries are considered rainforest-owning nations.

3. What makes a rainforest?

Tropical rainforests have evolved over millions of years into highly complex ecosystems. The trees, plant and animal life is incredibly diverse and the cultures of the indigenous and local people are unique.

They are also responsible for regulating temperature and weather patterns far beyond the forest itself and they remove from the atmosphere and store huge amounts of carbon.

4. The amazing natural habitat

Rainforests are home to:

- trees
- other plants and animals
- local and indigenous people

Trees

Rainforest trees can reach heights of over 60m (200 ft) high and there are five distinct layers.



1. The emergent layer

This layer is at treetop height and describes the emerging, umbrella-like upper branches of the very tallest rainforest trees. It is subject to extreme weather conditions, such as intense heat, strong winds and heavy rain, and is home to many animals including butterflies, gliders, eagles, small monkeys, bats, snakes and insects.

2. The canopy layer

Canopy trees are not as tall as the emergent trees. They are packed very close together creating a 'ceiling' of foliage, or canopy. The billions of leaves in the canopy compete for sunlight, and the dense foliage shades the forest floor from sunlight and protects it from heavy rain. The leaves produce food (simple sugars) for the plants and are eaten by the animals that live in the canopy, including insects, monkeys, bats and birds. About 70-90% of rainforest life is found here.

3. The understory layer

Around halfway down the height of the tallest trees is the understory layer. The temperature and conditions of the understory are quite sheltered and the dark humid conditions are ideal for insects, birds, butterflies, frogs, lizards, snakes and big cats such as jaguars and leopards. The trees at this height store huge reserves of carbon in their trunks.

4. The shrub layer

The shrub layer, sometimes considered to be part of the understory layer, lies between the understory and the forest floor, at around 8m (25 ft) high. The plants at this level are hugely important with many having medicinal properties.

5. The forest floor

Only a very small amount of sunlight (around 2%) reaches the dark, humid forest floor so this layer only has vines and young trees. Fungi help to release nutrients from the leaves on the ground back into the soil, to be reabsorbed by the roots of the rainforest trees as part of an ongoing nutrient cycle. The moist, dark climate of the forest floor makes it ideal for animals like beetles, frogs, lizards, snakes (such as the giant Anaconda), termites as well as the giant anteater, apes and even elephants.

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Other plants and animals

Tropical rainforests may be home to up to half of the world's known species of plants and animals and many more unknown plants and animals. The vast range of plants (flora) and animals (fauna) is important.

Around 80% of the developed world's foods, including potatoes, rice and yams; fruits; nuts, spices and of course, coffee and chocolate, originated in the tropical rainforest. In addition valuable medicines come from some of the plants and many more plants are thought to have useful properties that will help mankind.



Central American Harpy eagle

Indigenous and local peoples

Indigenous peoples account for 6% of the total world population (6 billion) and around a sixth of them depend on the forests for their livelihoods. The Amazon River Basin is home to over 300 different tribes, of which around 70 have had no contact with the outside world.

These tribes have unique cultures, ways of relating to the environment and have retained unique social and cultural practices. As custodians of the forest, their understanding about the environment in which they live, the natural resources on which they depend, and most importantly, how to protect them, is invaluable.



Amazonian squirrel monkey

Traditionally, most rainforest peoples hunt, fish and cultivate the land, moving on in time to allow regrowth of the rainforest without permanent damage. They use an intimate knowledge of plants, soils, animals, climates and seasons, to exploit nature in a way in which the environment can sustain itself as well as their needs. Houses are built from wood and foliage, ash from fires provides nutrients for the soil.



Parson's chameleon

5. What contribution do rainforests make to the Earth's climate and our way of life?

Rainforests are vital to the Earth's weather and are responsible for regulating temperature and weather patterns far beyond the forests themselves. In addition they remove (sequester) and store huge amounts of carbon from the atmosphere and release oxygen that we breathe. They are home to millions of animals and plants that are used as crops, we eat, and medicines, to make us feel better.



Goliath beetle

Our climate and weather – our food

Tropical rainforests regulate their local climate by maintaining regular rainfall, and preventing floods and droughts.

The interlocking forest tree roots hold the soil together preventing soil erosion and land slides, helping the soil and trees to absorb water, so it can be released slowly into streams and rivers, maintaining the water flow and preventing flooding. The trees also soak up rainfall brought by tropical storms and release it at regular intervals through transpiration (a plant's way of cooling down). This maintains humidity (water in the air) and adds to local rainfall.

The hot and wet but stable conditions combined with year round sun create the habitats for all the plants and animals in tropical rainforests. And the cloud formation and rainfall effect from the rainforests reach far beyond the forest, providing many countries with fresh water for drinking and growing food crops.

Carbon removal (sequestration) and storage

Tropical rainforests store vast amounts of carbon. The trees make food by absorbing and converting carbon dioxide into simple sugars locking away the carbon in their tree trunks. Tropical rainforests store more carbon than any other vegetation type on land.

Our way of life

The rainforests offer homes to animals and plants, they remove carbon dioxide, the main global warming gas, and release oxygen that we breathe. They stop flooding and provide rain. They give us crops and medicines and contain many more undiscovered foods and medicines. Local cultures and knowledge about the rainforest will help us to discover them. They support our way of life and their loss will affect us all.

See our Fact sheet: *What's happening to the rainforests*. If we lose the rainforests, it will mean we lose

1. many of the world's plants and animals (biodiversity)
2. resources that are critical to the welfare of some of the world's poorest people
3. the fight against climate change.

Cutting them down means more than losing the trees, plants and animals. It will affect our climate and the way we live.