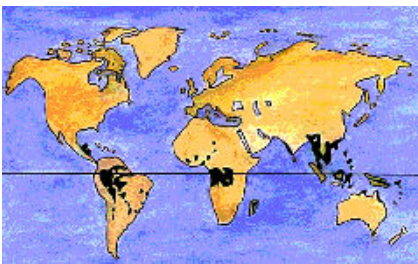




Rainforest

Rainforests are forests which grow in areas of high rainfall. Tropical rainforests are found between the Tropic of Cancer and the Tropic of Capricorn. There are other, temperate rainforests in areas such as the northwest Pacific coast of America. These are much cooler, but experience very high rainfall.



Before humans started destroying the rainforests, they covered 15% of the Earth's land area. Today, they cover less than 7% (See map, right for worldwide distribution of rainforests). In the last 200 years, the total area of rainforest has decreased from 7.1 billion acres to less than 3.5 billion acres. (1)

More than 30 million acres of tropical forest are destroyed each year, which means at current rates of destruction there will be no rainforest at all in just 40 years. (2)

The disappearance of the forest is called DEFORESTATION. As populations have grown and demands for land and timber have grown greater, so the deforestation has accelerated.

Asia lost almost a third of its tropical forest cover between 1960 and 1980 - the highest rate of deforestation in the world! In Thailand, 80% of the country's original forest has been cut down in the last 40 years. In the tropics alone, 38 million acres of forest are lost each year. (3)

Rainforests are the world's most spectacular ecosystems. An ecosystem is not just the plants, but also the birds, mammals, reptiles, fish, amphibians, invertebrates, bacteria, and even the non-living elements like soil, water and air. In some cases their climates have remained stable for the last 65 million years. This means

that they have developed arrays of life unequalled by any other ecosystems on the planet. The destruction of the rainforests will affect other ecosystems throughout the world.

Climate

The destruction of the rainforest could affect the world's climate.

Burning the rainforest is like creating a huge bonfire, throwing massive amounts of carbon dioxide into the atmosphere. Carbon dioxide or CO₂ is a 'greenhouse gas', which helps to retain the heat of the sun within the Earth's atmosphere. During the day, the rainforests absorb huge amounts of carbon dioxide from the air to make food in a process called photosynthesis. A by-product of photosynthesis is oxygen. So by burning the rainforest, we are not only adding huge amounts of CO₂ to the atmosphere, but we are also reducing nature's ability to absorb CO₂ and to produce oxygen. The more the rainforests are cut down and burned, the more the 'lungs' of the earth will be damaged.

During heavy downpours, the mass of vegetation in the rainforest catches and holds much of the rain, then 'disposes' of it through evaporation and transpiration; it breaks the force of the rain and protects the ground surface. Where trees are cut down in large numbers, this natural protection is removed, soil erosion increases and minerals are washed away. Trees also help to control the amount of water that is held in the soil. In areas around the world where forests have been felled, the rainfall patterns have changed. In some places, the rains have almost stopped falling, and in others, flooding has been caused.

Medicines

Hundreds of rainforest plants are used in modern medicines. It is estimated that 25% of all our medicines come from plants growing in the rainforest. For example, Vincristine, a drug taken from the rosy periwinkle of Madagascar has allowed an 80% remission rate for some forms of childhood leukaemia. Curare, a poison used by Amazonian indians on arrow tips can be used as a muscle relaxant if given in small doses.

Food

Many food sources are still being discovered in rainforests. The 'peach palm' of Brazil produces up to 300 peach-like fruits a season. The fruit has twice the food value of banana and more protein and carbohydrate than maize.

What Are the Threats to the Rainforest?

Humans have cut down trees for thousands of years, yet concern over deforestation is fairly recent, finally receiving worldwide media attention in 1997, with the forest fires in Indonesia and South America making the headlines. Forests are destroyed for a number of reasons:

- 1) The growth of populations in countries with rainforest.
- 2) The use of modern machinery makes clearing large areas of forest easy.
- 3) An increase in worldwide demand for tropical hardwoods has put a greater strain on the rainforests.

Fortunes can be made in the rainforest. Hardwoods like mahogany and teak are very valuable, and can be sold for a great profit, particularly to countries like Japan, where demand is strongest. The money that can be made is only available in the short-term. Once an area of forest is cleared, it will probably never recover. When a 35 metre tree is felled, it can crush up to 17 smaller trees as it crashes to the ground. There may be only two or three commercially viable trees in an area of forest the size of two football pitches.

If the cleared land is sold to local farmers for cattle grazing, the topsoil can be washed away by the rains within three or four years and the area may become a desert. Some American hamburger chains are supplied with Brazilian beef from cattle which have grazed in areas of cleared forest, so it is possible that by buying their products, you are indirectly helping the destruction of the rainforest.

Sometimes land is cleared so that it can be replanted with valuable cash crops such as palm trees, which

produce palm oil. The people at the head of logging companies avoid going broke by buying up new areas of forest and continuing to harvest the valuable trees, burning the rest to clear the land for farming.

Trees are also cut down for woodpulp, which until recently came only from softwoods like Canadian conifers. The pulp is used to make paper.

Can the Rainforests Be Replaced?

Rainforests are very fragile ecosystems. They are not good at recovering from disturbance. A mature or PRIMARY forest takes hundreds or even thousands of years to be formed and is built up of a set of layers, each with its own combination of plant and tree species.



Canopy - a tangled mass of branches, leaves, buds, flowers and fruit, home to many animals.

Ground layer - only fungi and a few ferns survive in the gloom.

Emergents - Here and there, the tallest trees poke above the canopy.

Shrub Layer - Young trees, shrubs, creepers and tall herbs struggle to grow in the dimness.

Where primary forest has been cleared, SECONDARY forest with dense, tangled undergrowth can be formed. Once primary forest has been disturbed it is unlikely to recover. The main reasons for the fragility of the rainforests are:

- * The trees, animals and soil have had millions of years to adapt to a set of very special conditions, and each species has a special "niche" in the overall structure.

- * The soil is almost infertile. It can be over 100 million years old, so all of the mineral nutrients have been washed away. The plants are adapted to collecting minerals from the air and from rain. If the trees are removed, the soil is quickly washed away.

- * There may be only one tree of a certain species in a hectare of forest. Seeds do not germinate easily and do not survive long on the forest floor.

What can be done?

The destruction of the rainforest cannot be allowed to continue at the present rate. Governments must plan carefully and control strongly. All tree felling cannot be stopped immediately, but any further destruction of rainforests must take place in a more planned way, with greater restrictions on logging companies. Conservation strategies could include:



Protected Reserves - No deforestation should be allowed in protected areas. Forests with the greatest variety

of species or with rare species should be strictly conserved. Originally, about 14% of the world's land was covered in forest - today it is about 6%. Only about 8% of this forest was under protection in 1996. At least 20% of all remaining rainforest needs protection.

Careful wood production - It is possible to cut down prime trees for timber without causing too much damage to the surrounding forest. If there are only three or four suitable trees in a given hectare, it ought to be possible to remove them using a large helicopter. This method is already used in the needle-leaf forests of the United States. Any trees which are removed should be replaced by seedlings.

Agroforestry - A combination of forestry and agriculture. It has been used successfully by tribal peoples for centuries, and involves planting trees, shrubs and ground crops in a gallery structure, imitating a natural forest.

Species Preservation - Plants and animals can be taken from the rainforests and bred in zoos, botanical gardens and laboratories. Captive stock can be reintroduced to areas where they have become scarce. Golden lions tamarins have been successfully released in a reserve in Brazil.

Efficient Land Use - More food can be grown on existing farmland if better farming methods are used.

The Future?

Every minute, some 37 football pitches (26 hectares) of forest disappear. (4) According to the World Resources Institute, 100 species die each day due to tropical deforestation. (5)

This destruction cannot be allowed to continue. It is happening because the developing countries with rainforest have huge debts to developed nations which they need to repay, and are using money from rainforest timber to help. This is raising money in the short term, but will eventually lead to greater poverty, as very little of the rainforest will ever recover once it is cut down.

Only by giving financial assistance or by writing off some of the debts can the rainforests be saved.

Developed countries have to take responsibility for the rainforests, and help underdeveloped countries to preserve them as a precious resource rather than destroying them for short-term gains.

This will not happen overnight. There is too much money at stake, and only strong public feeling in developed countries will lead to pressure being brought against those in control of Third World debt to help rainforest countries. Until this happens, the economic situation will force countries with rainforests to carry on cutting them down.

- 1) United Nations Environment Programme (UNEP)
- 2) World Resources Institute (WRI UNEP)
- 3) UN Food and Agriculture Organisation (FAO) 1995
- 4) Royal Botanic Gardens, Kew
- 5) World Resources Institute (WRI UNEP)

For further information:

See our factsheets on Rainforest Tribes and Animals of the Rainforest.

Read: 'Rainforests', Rodney Aldis, 1991, Cloverleaf Publishing.

Surf the Net - Check out Rainforest Relief's site at:

<http://www.envirolink.org>

and type rainforest into the advanced search facility

Also visit the rainforest action network at

<http://www.ran.org/>

The Rainforest Information Centre at
<http://www.forests.org/>

World Resources Institute at
<http://www.wri.org/>

Royal Botanic Gardens, Kew at
<http://www.kew.org.uk/>

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