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Rainforest

By William C. Robison

Rainforest and *jungle* are terms that are often used synonymously but with little precision. The more meaningful and restrictive of these terms is *rainforest*, which refers to the climax or primary forest in regions with high rainfall (greater than 1.8 m per year), chiefly but not exclusively found in the tropics. Rainforests are significant for their valuable timber resources, and in the tropics they afford sites for commercial crops such as rubber, tea, coffee, bananas and sugarcane. They also include some of the last remaining areas of the Earth that are both unexploited economically and inadequately known scientifically.

The term jungle originally referred to the tangled, brushy vegetation of lowlands in India, but it has come to be used for any type of tropical forest or woodland. The word is more meaningful if limited to the dense, scrubby vegetation that develops when primary rainforest has been degraded by destructive forms of logging or by cultivation followed by abandonment.

Types of Rainforest

Rainforests may be grouped into two major types: tropical and temperate. Tropical rainforest is characterised by broadleaf evergreen trees that form a closed canopy, below which is found a zone of vines and epiphytes (plants growing on the trees), a relatively open forest floor, and a very large number of species of both plant and animal life. The largest trees have buttressed trunks and emerge above the continuous canopy, while smaller trees commonly form a layer of more shade-tolerant species beneath the upper canopy. The maximum height of the upper canopy of tropical rain forests is generally about 30 to 50 m, with some individual trees rising as high as 60 m above the forest floor.

The largest areas of tropical rainforest are in the Amazon River basin of South America, in the Congo River basin and other lowland equatorial regions of Africa, and on both the mainland and the islands off Southeast Asia, where they are especially abundant on Sumatra and New Guinea. Small areas are found in Central America and along the Queensland coast of Australia.

Temperate rainforests, growing in higher-latitude regions having wet, maritime climates, are less extensive than those of the tropics but include some of the most valuable timber in the world. Notable forests in this category are those on the northwest coast of North America, in southern Chile, in Tasmania, and in parts of southeastern Australia and New Zealand. These forests contain trees that may exceed in height those of tropical rainforests, but there is less diversity of species. Conifers such as redwood and Sitka spruce tend to predominate in North America, while their counterparts in the southern hemisphere include various species of eucalyptus, Araucaria (such as the monkey puzzle tree), and Nothofagus (such as the Antarctic beech).

Ecology

Rainforests cover less than 6 percent of the Earth's total land surface, but they are the home for up to three-fourths of all known species of plants and animals; they also contain many more species as yet undiscovered. Studies suggest that this great diversity of species is related to the apparently dynamic and unstable nature of rainforests over geologic time. Despite their appearance of fertile abundance, rainforests are fragile ecosystems. Their soils can quickly lose the ability to support most forms of vegetation once the forest cover is removed, and some soils even turn into hard laterite clay. The effect of forest removal on local climates is also often profound, although the role of rainforests in world climatic changes is not yet clear.

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Humans and Rainforests

Throughout history, humans have encroached on rainforests for living space, timber, and agricultural purposes. In vast portions of upland tropical forests, the practice of 'shifting cultivation' has caused deterioration of the primary forest. In this system of agriculture, trees are killed in small plots that are cropped for two or three seasons and then abandoned; if the plots are recultivated before primary vegetation has reestablished itself, a progressive deterioration of the forest results. On the island of Java, the lowland primary forest has been almost totally removed and replaced with rice fields or plantation crops such as rubber. Logging for exotic tropical wood has grown extensively in recent decades, leading to rapid deforestation of rainforests in places such as Brazil, Central America and Malaysia. Temperate rainforests in Canada's British Columbia are also in danger from logging.

Numerous organisations are now attempting to reduce the rate of the loss. As part of the response to deforestation, a number of tropical rainforest sanctuaries have been established around the world. Local leaders such as Chico Mendes of Brazil have spearheaded efforts to preserve the rainforests while allowing the indigenous inhabitants to continue to earn a livelihood by collecting rubber, nuts and other forest products. Pharmaceutical companies have also taken an interest in preserving tropical rainforests, which may have plants of medicinal value among their many plants.

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