Rain Forest Structure

There are four layers, each having distinct environmental conditions and organisms adapted to it:

- **Emergent Layer** (sometimes called Overstory) — Tallest layer, emerging from the canopy layer. Trees grow up to 600 ft (200 m) with trunks up to 16 feet (5 m) around. Most are hardwood, broad-leaf evergreens with buttressed roots. Leaves are thick and waxy to hold water. Animals found here include monkeys, eagles, butterflies, insect-eating bats, and snakes.
- **Canopy Layer** — Spreads out below the emergent layer. Trees grow to 150 ft (45 m). Leaves are smooth and oval and come to a point. These are called "drip tips" and serve to shed rain quickly. The canopy filters out 80% of the light, preventing it from reaching the forest floor. The animals found in the canopy include monkeys, sloths, bats, treefrogs, ants, beetles, parrots, hummingbirds, and snakes. Epiphytes (plants that grow up in the trees and never touch the ground) like bromeliads collect pools of water.
- **Understory Layer** — Plants grow here up to 12 ft (3.5 m) in the shade of the canopy trees that cut out 15% more light or a total of 95%. Plants have unique adaptations such as strong smelling flowers to attract the main pollinators (insects) and cauliflory (a phenomenon which makes them more conspicuous to the pollinator). Plants include dwarf palms, soft-stalked species of families such as ginger, acanthus, and Maranta (prayer plant). Animals include snakes, frogs, parakeet, leopard, jaguar, and many insects.
- **Forest Layer** — Almost no plants grow here. The floor receives 2% of the light or less. The relative humidity is often 100%. Rapid decomposition occurs here and recycles many nutrients to the forest. A high concentration of fungi is found here. Shallow-rooted trees compete for these nutrients. Animals found here include tapirs and insects including termites, cockroaches, beetles, millipedes, scorpions, and earthworms.

Value of the Rain Forest

Trees supply us with oxygen and use excess carbon dioxide. Many species of plants and animals that live here are not found anywhere else in the world. There are over 1500 potential new fruits and vegetables growing in the world's rain forests. Many products and medicines come from the rain forest. Future medicines may exist in rain forest organisms. A quarter of the medicines in our drugstores today owe their origins to the rain forest plants and animals. Rain forest tribes have a rich culture and knowledge of the rain forest that more industrialized nations do not possess.

Geography

Over half of the world's tropical rain forests are in South and Central America. The remainder are in Africa, Asia, and Australia. Almost all tropical rain forests lie between the Tropic of Cancer and the Tropic of Capricorn. The largest rain forest stretches across the Amazon Basin in South America. The Amazon is the largest river system in the world.

The People

A large area of rain forest can support only a few hundred people so rain forest tribes are spread thinly through the wooded lands. Rain forest tribes have their own cultures and customs. They have a deep understanding of their surroundings and are able to survive in the hot, humid environment. Few people live beyond age 40. Diseases like influenza and measles, introduced by European settlers, have caused over 80 tribes to disappear. Although they have rights according to international law, their land is often stolen and invaded. As the rain forests are destroyed, the knowledge of the ancient tribes will disappear also.

Rain Forest Destruction

Rain forests are cleared to reach minerals such as gold, copper, iron, and uranium, and for cash-crop plantations like coffee, cocoa, or bananas. Many poor, homeless people are encouraged to leave overcrowded cities to farm pieces of rain forest using slash-and-burn techniques. Slash-and-burn involves burning vegetation to clear the land and enrich the soil. After a few years of growing crops, the land becomes as barren and lifeless as a desert. This is because thin topsoils are quickly depleted and washed away by tropical rains. Scientists believe that there will be no rain forests left by the year 2050 if destruction continues at the present rate.