

FOREST OF UCO

Background Information

Welcome to the Forest of Uco

You and your students are about to embark on an exciting journey into a South American rain forest! Get ready to delight in its beauty, to discover the diversity of life that flourishes here, to understand what threatens its very survival, and to learn why and how we must all help to preserve it. In addition, your students may gain a greater understanding of how cultures develop including their own, as they discover similarities and differences in the culture of the Tairona. And, of course, they will find out about the unique spectacled bear that lives here.

Exhibit Areas

You'll enter the exhibit through the village of Prefacio, a lively settlement on the fringe of the forest – modeled after the Colombian region of the Sierra Nevada de Santa Marta. From there, you will follow a trail that winds through the Forest of Uco and leads you to other areas:

- ⓐ A scientist's base camp
- ⓑ The lost city of the ancient Tairona, once pristine, but now a working dig site for archaeologists and tomb-robbers.
- ⓒ A burned area of cleared forest land where a family tries to farm and raise cattle on eroding soils with few nutrients.
- ⓓ A makeshift laboratory where scientists study sustainable uses of the forest.
- ⓔ A primitive forest area where visitors learn important messages from the (fictional) indigenous people who live in the forest and who call it the "heart of the world".

Meet the animals in the forest

Spectacled Bear

Named for circular markings around eyes on some bears that make them look like they are wearing glasses or spectacles. Every bear has different markings just like human fingerprints. The Phoenix Zoo has two female bears born in December 1995.

Range: Only bears native to South America

Size: Males weigh 250 – 300 pounds.

Adaptations: Excellent tree climbers. Sometimes build and sleep in a nest in the tree. Also good swimmers. Claws – sharp for climbing trees. Does not hibernate

Diet: leaves, nuts, fruit, and bamboo shoots. Also digs up grubs. Occasionally they eat small mammals and raid farmer's crops.

Status: Spectacled bears are endangered due to loss of habitat and hunting for body parts.

Howler Monkey

Males are black and females are tan.

Size: female weighs 8 – 12 pounds and male weighs 11 – 19 pounds

Diet: leaves, fruit, and nuts. Sometimes a messy, wasteful eater, taking one bit from a piece of fruit and then dropping the rest.

Adaptations: Can't leap through the forest, but it can drop from one level to another. Can outrun a person on the forest floor when traveling on all fours. Prehensile tail acts as fifth limb. Deep roaring sounds it uses to communicate can be heard up to 3 miles away. Commonly roars at dawn to define its territory.

Status: considered at low risk, but the habitat of all rain forest animals is in danger.

Toucan

Adaptations: Large Banana-shaped bill is used to skin fruit, drill wood, and probe in the mud. The bird seizes food with the tip of its bill. After the bird has acquired food on its bill, it throws back its head to toss the morsel into its mouth. Likes to gather with other toucans to search for ripe fruit

Diet: Swallows pieces of fruit whole, unlike other birds. Also eats insects and small animals.

Status: at some risk due to pet trade and habitat destruction

Pacu

Related to piranha

Size: can reach 30 inches across and weigh up to 70 pounds

Diet: fruits, nuts, and berries that drop in the water. Their droppings help spread seeds down stream and help trees reproduce.

Status: used for food source but no serious threat at this point.

Note: has a special relationship with fig tree. The fig tree is only pollinated by one kind of wasp and fish relies heavily on the fig.

Scarlet macaw

Member of the parrot family

Diet: nuts, fruits, seeds

Adaptations: beak can break a broom handle. Uses tongue to get meat out of nut shells. Uses feet to help eat.

Status: at risk due to pet trade and habitat destruction

Rainforest Quick Reference

Location

Though they are home to nearly half of the world's plant and animal species, tropical rainforests cover only about 7% of the earth's land surface.

Stretching in a broken band centered on the equator, tropical rainforests are located in more than 40 countries. Many of these countries contain only small remnants of forests.

The 3 largest blocks of tropical rain forest are located in central and west Africa (mainly in Zaire), Southeast Asia (mostly in Indonesia), and the neotropics (primarily in Brazil). The largest tract of tropical rainforest in the world is the Amazon rainforest. Nearly sixty percent of it lies in Brazil; the rest spreads out of Venezuela, Colombia, Peru, Bolivia, Ecuador, Guyana, Suriname, and French Guiana.

Temperatures

Air temperature changes little during the day or during the year. Average yearly temperature is at least 75° F but can be as high as 86° F, depending on the forest's altitude.

Weather

- Ⓢ Average relative humidity is high; 77% to 88%
- Ⓢ Rainforests farther away from the equator experience more marked dry seasons and wet seasons.
- Ⓢ Storms may be strong
- Ⓢ Rainforests average 80 or more inches of rain per year

Soil

Tropical rainforest soils vary, but they are generally nutrient poor. The topsoil layer is thin, often not more than an inch deep. There is very little decaying leaf matter on the forest floor. The rainforest's nutrients are held in the trees, not the soil. That is why removing a tree from the rainforest steals away the "nutrient wealth" of the forest. What's left is soil that is usually infertile and can only support farming for about 3 years.

Plants

- Ⓢ Plant biomass (the total weight of plant matter) for a given area is generally higher than in other biomes.
- Ⓢ Plants are arranged in a complex layered forest structure from emergent, to canopy, to the understory, to the forest floor.
- Ⓢ There are many species of trees, vines, and epiphytes; lots of woody plants, very little underbrush
- Ⓢ Some 1,600 species of the pineapple family exist in South America
- Ⓢ The small country of Ecuador has more than twice as many plant species as the entire continental United States.

Animals

- Ⓢ Abundant wildlife; very high species diversity
- Ⓢ Many animals are specialized to feed on just one or two foods. They have complex relationships with other animals and plants.

Rain forest resources

Tropical rain forests contain renewable resources that we use every day. These include such food products as fruits, nuts, and spices, and such medicines as antibiotics, anti-cancer drugs, and anesthetics. (One fourth of all medicines we use are derived from rain forest plants and trees). Other products include rubber, rattan, latex, cocoa butter, and some diesel fuels (made from sap that comes from the copaiba tree.) Tropical rain forests also contain such non-renewable resources as tropical lumber products (mahogany, teak, ebony, and rosewood).

Layers of the rainforest

Rainforest trees grow in distinct layers, each with its own plant and animal species. Life is richest in the canopy, which contains most of the leaves, flowers, and fruits. Under the canopy is an understory of smaller trees and a shrub layer of large-leaved plants that can tolerate shade. The forest floor is dark and cool with rotting leaves, which are quickly broken down by insects, worms, and fungi. Tall trees, called the emergent, poke above the rainforest canopy.

Emergent

The emergent layer is made up of the tops of the tallest trees, which stand 75 – 250 feet tall. These trees are wide scattered. They tend to be very straight, with just a few lower branches and leave to intercept sunlight.

Who lives here?

Harpy eagle

Giant morpho butterfly

Hyacinth macaw

Canopy

Canopy trees are usually 40 – 90 feet tall and closely spaced. They are generally very straight, with branches only at the crown, where the sunlight falls. The top of the canopy in most rainforests is in nearly constant sun, but the branches of the canopy block most of the sun from reaching the lower layers of the forest. Many tree leaves contain potent poisons to protect them from plant eaters. This is the most active layer of the forest.

Who lives here?

Bromeliad

Fern

Two-toed sloth

Opossum

Anteater

Iguana

Katydid

Monkeys including: howler, squirrel,
capuchin, tamarin, marmoset

Emerald tree boa

Parrots including macaws

Three-toed sloth

Moths and butterflies

Toucan

Spectacled owl

Leaf-cutter ant

Understory

The understory extends from near the ground up about 40 – 50 feet. It consists of the trunks of canopy trees, of young trees still growing toward the canopy, and of shade-tolerant trees. These trees receive very little sunlight. But, unlike most trees outside the canopy of the rainforest, these trees don't need a tremendous amount of light. Leaf-eating animals dine here because leaves are large and often less poisonous than those in the canopy.

Who lives here?

Prehensile-tailed porcupine

Ocelot

Boat-billed heron

Four-eyed opossum

Three-toed sloth

Spectacled bear

Forest floor

The image we often see in movies of people hacking through jungles with machetes occurs only near a river or some other clearing where sunlight reaches the forest floor. Most of the rainforest's ground level is in deep shade, and plant life is quite sparse.

Soil quality on the forest floor is very poor. "Litter" falls to the ground in the form of leaves, limbs and trunks, and the remains of dead animals (about 5 tons per acre every year). The debris breaks down very quickly due to the high temperature, humidity, and the activity of termites, earthworms, and fungi. The organic matter, recycled into nutrients, tends to stay on the surface where it's quickly absorbed by the trees' shallow roots. Because the soil often is not rich, rainforest trees don't send roots deep into the earth. Instead, many roots break through the earth and grow along the ground. Since these shallow roots are often unable to support the weight of the tree, some trees have developed supports called buttresses. These are large growths that spread out from the base of the tree to keep the tree from toppling.

Who lives here?

Tapir

Land crab

Coati

Fungi

Bullet ant

Agouti

Anaconda

Earthworm

Armadillo

Beetles