

Highlights

# Day and Night in the Rain Forest



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## Day and Night in the Rain Forest

By Dana E. Townsend

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First Edition



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By Dana E. Townsend

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## Chapter 1

### What Is a Tropical Rain Forest?

When you think of a tropical rain forest, think RAIN!

Drip, drip, drip! That's the sound of raindrops falling from leaf to leaf. They make their way through the tops of the tallest trees to the forest floor below. Few plants can grow on the forest floor. The light they need is blocked by the crowns of the trees above.

It is always warm and damp here. Rotting plant and animal matter carpets the ground. This is food for spiders, beetles, and earthworms. Mushrooms sprout everywhere. Mammals such as piglike tapirs (**tay•puhrz**) dig for roots to eat. It's like a recycling center, where nothing goes to waste.



# Rain Forest Layers

## Emergent Layer

Eagles, hawks, and butterflies are found in this layer.

150 to 270 feet

## Canopy

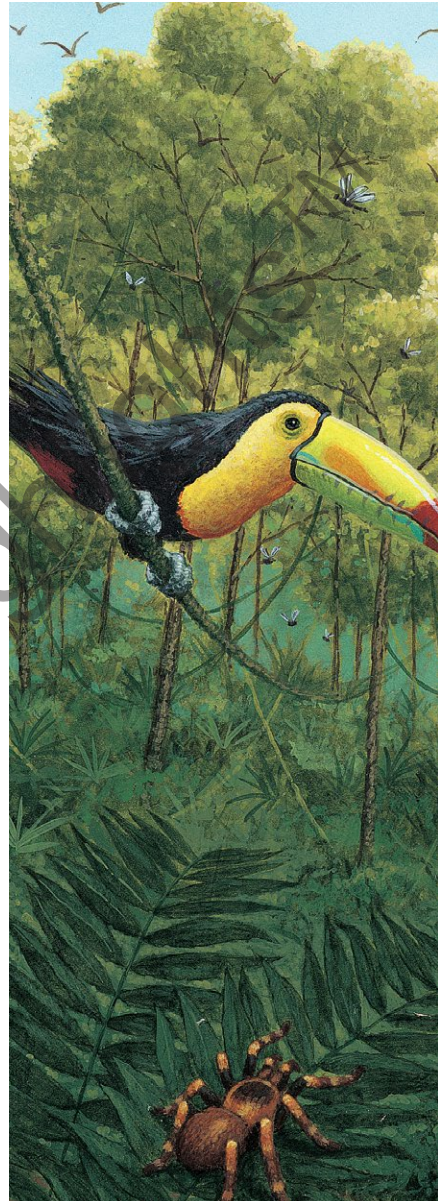
This layer is also known as the “roof” of the rain forest. Scientists say that at least 30 million kinds of insects, spiders, and their relatives live in the rain forest canopies.

65 to 150 feet

## Understory

Not much sunlight reaches this part of the forest, just above the forest floor. Plant life is limited. Tree frogs, snakes, and jaguars can be found here.

Forest floor  
to 65 feet





## Forest Floor

This is the darkest part of the forest. Baby plants called “seedlings” try to grow toward the sunlight. Giant anteaters, insects, and spiders live here.

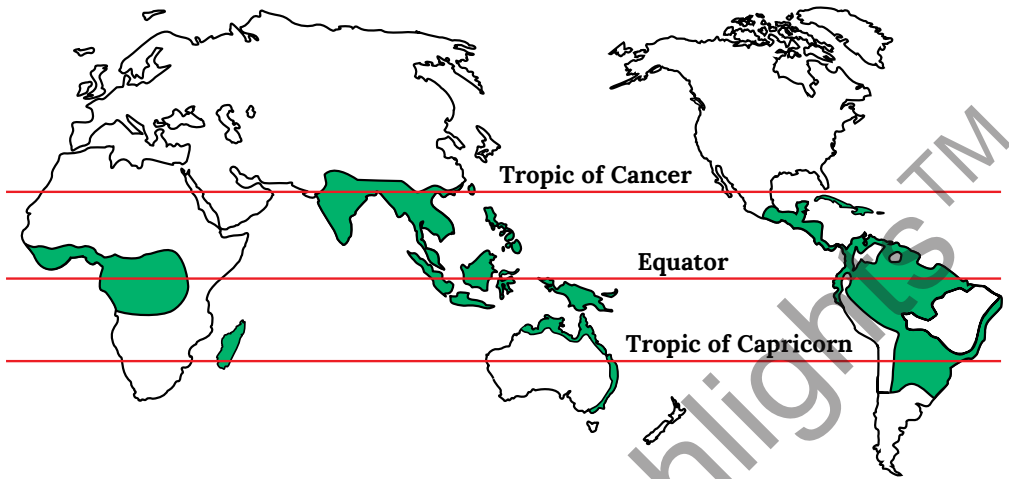


If you look up from the forest floor, you'll see the understory. It gets a little more sunlight than the forest floor, but not much. The shrubs and small plants that grow here have **adapted** to the low level of light. Snakes, owls, frogs, and some monkeys live in the understory.

Going higher, you'll find the forest canopy. Its branches are covered with mosses, ferns, and vines. The canopy acts as a giant umbrella. It shields the lower levels of the rain forest from the hot sun, the harsh winds, and the pounding rain. Over 70% of the rain forest animals, including sloths, toucans, lizards, and millions of insects, make their home in the canopy.

A few lucky trees stick out above the canopy. These trees make up the very top layer of the rain forest: the emergent layer. Hornbills, macaws, and other birds fly around this open area. They are looking for fruit or for a place to nest.





The world's tropical rain forests are found in a narrow band between the Tropic of Cancer and the Tropic of Capricorn.

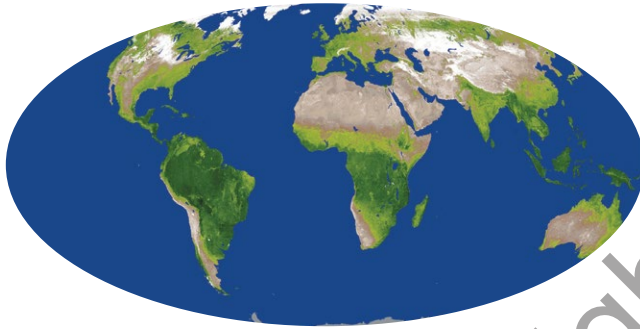
## Chapter 2

### Where in the World Are Tropical Rain Forests?

When you think “tropical,” you should think sunny, hot, and humid. The word *tropical* refers to the area of the world that lies along Earth’s equator. The equator is the imaginary line that circles the middle of our planet.

Tropical rain forests are found in Central and South America, Hawaii, Madagascar, Indonesia, Australia, Asia, and Africa. The largest rain forests are in South America, Africa, and Southeast Asia.

This is a satellite picture of Earth. The darkest green areas show where tropical rain forests grow.



### Why Are Tropical Rain Forests So Special?

A rain forest is a biome (**by•ohm**). A biome is a large land area that has special features. These features make it different from other areas. What makes a tropical rain forest different from a desert or a grassland? In a tropical rain forest, it rains just about every day. The sun is always strong. There are no seasons. The temperature stays steady and very warm.

Tropical rain forests are the oldest kind of living **ecosystem** on Earth. They have been here since the time of the dinosaurs. The rain forest biome covers less than 2% of Earth's surface. Yet it is home to more than half of all the animal and plant species (**spee•sheez**).

### Did You Know?

- Average rainfall in rain forests is about 80 inches a year. That's twice as much as New York State gets.
- Some rain forests get over 400 inches of rain a year!
- The average temperature in rain forests is 80° F.



Anteaters don't have teeth, so they can't chew their food. Instead, their strong stomachs crush the ants.

## Chapter 3

### Day and Night in the Rain Forest

Just think about it! Over half of the world's species live in rain forests. How do they all live together without running out of food, water, and space? Their secret is simple. They **specialize**.

Each species survives because it lives in its own special way. Animals find a special kind of food, a special place to build a home, a special way of getting around, and a special way of defending themselves.

For example, an anteater has a long, sticky tongue and a good sense of smell. It can find and eat ants whenever it's hungry.



**The Day Crew:**  
The green-crowned hummingbird drinks nectar from a flower.

## Working in Shifts

Imagine it is lunchtime at a big school. Everyone is really hungry. The lunch bell rings. What would happen if EVERYONE rushed to the cafeteria and tried to get lunch at the same time? It would be a mess!

Animals in the rain forest have this problem, too. If they all tried at the same time to eat the same food, drink the same water, and build their homes in the same place, it just wouldn't work.

So the rain forest animals work in “shifts.” Some animals are active in the daytime. And when those **diurnal** animals go to sleep at night, the **nocturnal** animals come out. In this way, both types of animals survive in the rain forest.



**The Night Crew:**  
The tarsier is hunting insects at night.





**The keel-billed toucan's colorful beak is almost as long as its body.**



**This red-knobbed hornbill lives in the rain forests of Indonesia.**

## **Chapter 4**

### **Rise and Shine!**

As the sun rises, the rain forest comes alive with the sounds of the tropical birds. You hear the barking of hornbills, the squawking of macaws, and the croaking of toucans. They rustle among the leaves of the canopy looking for fruit, nuts, and insects.

The toucan's huge beak is perfect for picking up and eating fruits. It swallows them whole and spits out the seeds. The toucan is a poor flier. It moves around by hopping from branch to branch. Its call sounds like "RRRRRK!"

The hornbill's call sounds just like a big dog barking. There are 54 species of hornbills that we know of now. All have giant bills. Like toucans, hornbills are also rain forest helpers. They feast on figs, their favorite fruit. Then they pass the seeds through their bodies. Sometimes the fig seeds grow into new fig trees.



People take scarlet macaws from their rain forest home to sell them as pets. They can live in captivity for up to 80 years.

The **endangered** scarlet macaws are big, noisy, colorful parrots. They're good climbers. They climb by pulling themselves up with their hooked beaks and sharp claws. They are fast fliers, too. They can fly at speeds up to 35 miles per hour.

Their bills are not only good for climbing. They are also good for opening hard nuts, chewing fruits, and grinding seeds.



**Spider monkeys can swing from tree to tree faster than a person can run.**

## **Chapter 5**

### **Getting Around the Treetops**

Spider monkeys are experts at getting around the forest canopy. They have long, slender arms and legs. They are like acrobats. They swing through the trees, grasping the branches with their hands and powerful tails. The underside of a spider monkey's tail has no fur. Instead, it has ridges like fingerprints for extra grip.





**Pygmy marmosets are good jumpers. They can leap up to 16 feet.**



**Pygmy marmosets are the smallest monkeys in the world. A baby marmoset is about the size of a walnut. You could hold one in the palm of your hand.**

### **Little Springer**

Like spider monkeys, pygmy marmosets also need to get around the forest canopy.

But these tiny monkeys don't swing—they spring! They run along branches and jump across the gaps between trees. Their sharp claws help them hold on when they land. Marmosets also have a special nail on their big toes. This lets them climb trees like squirrels. They spend their days playing and looking for insects, fruit, and tree sap to eat.



# Chapter 6

## The Fight for Light

Animals aren't the only climbers. Some plants and trees climb, too. Remember, the lower levels of the rain forest are dark. How do plants get the sunlight they need?

Many plants climb to the top of the rain forest, where it's brighter.

Woody vines called lianas (lee•ah•nuhz) are good climbers. They have to be. Lianas sprout on the shady forest floor. As soon as they are big enough, they “lasso” a nearby tree. They wrap around the tree as they grow. When they reach the canopy, they just keep on growing. They often drop down to the ground and climb back up another tree. In Panama, a scientist found a single liana vine growing on 64 different trees!

**Lianas are climbing vines that root in the ground. They are also called “bush ropes.”**





Orchids are colorful epiphytes.



Bromeliad leaves form cups that catch rainwater. Animals drink the water. Frogs, salamanders, and insects lay their eggs in the treetop “tanks.”



## Hanging On for Dear Light

Epiphytes (**ep•uh•fyts**) have a different way of getting the sunshine they need. They “ride piggyback” on other plants. An orchid (**or•kid**) is an epiphyte. So is a bromeliad (**broh•mee•lee•ad**), a member of the pineapple family.

Epiphytes start out as seeds dropped by birds. Lucky seeds get stuck in rough bark or between tree branches. The seeds sprout and grow there. Their roots hang down into the air, where they soak up rainwater.

Certain fig trees are known as “stranglers.” The fig sprouts on a tree branch and sends its roots down the trunk. The roots get stronger and thicker as they grow toward the ground. The roots touch and join together to form a stiff basket. The tree is strangled and it dies. Then the fig stands alone.



Pollen grains stick to a bee's fuzzy body. The bee will move the pollen to the next flower it visits. This is called **pollination**.

Butterflies search for sweet-smelling flowers. When they fly away, they spread pollen to flowers in other parts of the forest.

## Chapter 7

### Flowers and Fliers

During the day, the rain forest is full of busy butterflies, bees, and birds. They fly from flower to flower looking for sweet nectar to drink. Each time they visit a flower and take a drink, some of the flower's **pollen** sticks to their bodies. When they visit the next flower, some of the pollen grains rub off. Now the flower is fertilized, and it will produce a fruit. Inside the fruit will be seeds that may later sprout and grow into new plants.





**Tent bats snuggle together for comfort and safety. A tiny tent bat weighs about as much as a nickel.**



**This leaf-mimic katydid is hiding in plain sight.**

Daytime is full of danger. The sun is shining and hunters are out. How do animals stay safe? Some hide.

Tent bats are nocturnal fruit eaters. In the daytime, they sleep together in cozy tents. They make their own shelter. They take a big bite out of a leaf so it folds over.

Then they **roost** in their little “tent” until it gets dark.

Some animals hide by blending in with their surroundings. This katydid (**kay•tee•did**) looks just like a leaf. Its body even has lines and spots like a leaf. Its legs look like twigs. If an animal bothers the katydid, it will fall to the forest floor. It will lie on its side, pretending to be a dead leaf. When the danger is gone, the katydid will climb back up the tree.





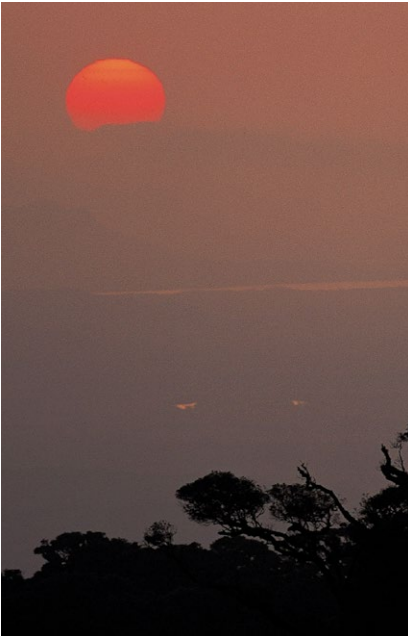
A mother sloth and her baby “hang out” in the treetops.

## Hanging Around

How would you like to hang down from a tree all day? That’s just what a sloth does.

Instead of fingers and toes, it has long, curved claws. It uses them like hooks to hang from branches. A sloth eats, sleeps, and travels—all while hanging down from a branch!

It’s hard to see a sloth because it is so quiet and still. In fact, sloths are some of the slowest-moving animals on Earth. They move so slowly that tiny plants called algae (al•jee) grow on their long hair. These algae give their coat a greenish color. This makes them blend in with the leaves of the canopy.



The spiny katydid sings most of the night in the rain forest.

## Chapter 8

### Noisy Nights

As darkness falls, you'll hear croaking frogs, hooting monkeys, and squeaking bats. Like a thousand tiny chainsaws, the steady buzzing of cicadas (si•kay•duhz) fills the air. This is when the nocturnal animals come out of hiding.

Spiny katydids search for stems, fruits, and flowers to eat. Males sing their loud, whistling song to attract mates. They have to watch out, though. Katydid is the favorite food of bats, snakes, monkeys, and other night animals. But they're not helpless. A spiny katydid can use its powerful jaws, spiky face, and spiny legs to defend itself.



A leaf-cutter climbs 100 feet and carries a piece of a leaf back to its nest. A leaf can weigh 50 times a leaf-cutter's body weight. That's like walking 6 miles with a car on your back!

**“Crunch, crunch, crunch . . .”**

Leaf-cutter ants are like little farmers. They grow their own food. Each night, they climb to the forest canopy in search of leaves. They cut up leaves and take the pieces back to their underground gardens. They chew the leaves into tiny, soggy clumps. Soon, a special **fungus** grows there. Now the leaf-cutter ants have the food they need!



The red-eyed tree frog is named for its huge red eyes. It also has strong legs for jumping. Its toes are like little suction cups. At night, it hunts and catches insects with its long, sticky tongue.

## Chapter 9

### Big Beautiful Eyes

Imagine. It's midnight. You walk into your dark bedroom. You can see only shapes in the shadows. What will you do? You'll probably turn on the light!

Some nocturnal animals have a special way of seeing in the dark—they have really BIG eyes. Good night vision helps to find food. It also helps to get away from **predators**.





A spectral tarsier looks for food.



Aye-ayes are nocturnal primates. Monkeys, apes, and humans are also primates.

The spectral tarsier (**tahr•see•uhr**) spends over half the night chasing insects. It watches for ants, beetles, moths, and katydids. As soon as it sees one move, it leaps and grabs the insect with its long fingers.

Tarsiers have big eyes that don't move like yours do. If the tarsier wants to look to the left or to the right, it must turn its whole head. It can turn its head almost all the way around in a circle.

The cat-sized aye-aye (eye-eye) can see in the dark. It leaps from tree to tree like a squirrel. It uses its good eyesight to find fruits and nuts. It also listens for wood-chewing insects that live in tree branches. When it hears one, it rips a hole in the bark and plucks out the insect.



The civet (siv•it) is a nocturnal cat. It uses its excellent sense of smell to find food in the dark.

A bat uses its special senses to find food at night.

## Chapter 10

### Super-Special Senses

Finding your way around in the dark can be tricky. Animals have special senses that help them. Bats use a type of sonar called echolocation (ek•oh•loh•kay•shuhn). They make high-pitched squeaks that bounce off objects. These echoes let the bats “see” in the dark. They can fly



**The pit viper snake waits for an animal to move. The snake feels the movement. Then it strikes!**

**The wood owl uses its good hearing to find prey. It listens for small animals. When it hears one, it swoops down and grabs it.**



through the forest without bumping into anything. They can sense an object as thin as a human hair.

Hungry bats spend the night drinking flower nectar, eating fruits, and catching insects. Bats pollinate flowers, spread seeds, and control insects.





If you hear a “chirp, chirp, chirp,” it might be a tiny frog hopping on the forest floor. But you’ll have to look closely to see this little guy.



The tamandua is a kind of anteater. Its mouth is only as big around as a pencil. But its tongue can stretch more than a foot to lick up its prey.

## Chapter 11

### Hoppers, Walkers, and Stalkers

The rain forest floor is a busy place. Night animals can be seen hopping, walking, and stalking. They are looking for an evening meal.

The jaguar is looking for its last meal of the evening. The sun will come up soon. And when it does, the day animals will take over again.

So the story goes on. Tomorrow will be another day of hunting and hiding in the tropical rain forest.





Jaguar

# Chapter 12

## Rain Forest Rescue!

Rain forests are full of wonderful animals. They also give us many things we need. Did you know that these foods come from rain forests and land around them?



**bananas**



**pineapples**



**oranges**



**lemons**



**coconuts**



**cashews**



**peanuts**



**corn**



**rice**



**avocados**



**onions**



**tomatoes**



**peppers**



**sugar**



**cinnamon**



**vanilla**



**cocoa**

Many of the medicines we can buy have ingredients from the rain forest. Scientists are still learning how rain forest plants can help us make new medicines.

Rain forests used to cover 14% of Earth's land. Now they cover less than 2%. Most of the rain forests have been destroyed in the last 50 years. Why are rain forests in danger?

People are cutting down rain forest trees for wood. We use wood to build houses, to make furniture, and to make paper. People are also cutting down the rain forests to farm and to drill for oil.

What can YOU do to rescue the rain forest?

Here's a list of ideas:

1. Use recycled paper to draw and write on.
2. Write on BOTH sides of every piece of paper you use whenever possible.
3. Bring your lunch to school in a reusable lunchbox or bag instead of paper whenever you can.
4. Look for products without a lot of packaging. Packaging is made from trees in the rain forest.

The rain forest is counting on you!

## Glossary

- adapted** (uh•dap•tid) change in a plant or an animal to fit the environment
- diurnal** (dy•ur•nuhl) active during the daytime rather than at night
- ecosystem** (eek•oh•sis•tuhm) all the living and nonliving things in a certain area
- endangered** (en•dayn•juhrd) at risk of becoming extinct, or dying out
- fungus** (fung•guhs) a plant that grows without sunlight; often found growing on rotting plants and wood; mushrooms are a type of fungus
- nocturnal** (nok•tur•nuhl) active during the night-time rather than during the day
- pollen** (pol•uhn) a powdery material made by flowers; contains grains needed for pollination



**pollination** (pol•uh•**nay**•shuhn) the movement of pollen from one flower to another; results in the growth of a new fruit

**predators** (**pred**•uh•tuhrz) animals that hunt other animals for food

**roost** (roost) to sit or rest

**specialize** (**spesh**•uh•lyz) to do something in a special way

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## Learning

# Connection

**Talk About It** Discuss the following questions. Use examples from the book to support responses.

- How do the animals in the rain forest help each other?
- Why is it important to keep rain forests alive?

**Help the Rain Forest** Copy down the list of ways to help the rain forest from page 29. Then create a poster to display for your family. Encourage everyone to follow the tips.

**Vocabulary** Practice these words by using them in sentences and talking about how they relate to this book.

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Nonfiction



Meeting Challenges

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