



The Forest in the Trees

by Connie McLennan

The Forest in the Trees

Most people know the coast redwoods are tall, tall trees. In fact, they are the tallest trees in the world. What many people don't know and will never see is the whole other forest growing high in the redwood canopy. This adaptation of *The House that Jack Built* explores this secret, hidden canopy habitat filled with all kinds of plants and animals that call this forest home.



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- Coast Redwood Habitat: Living or Nonliving?
- Redwood Forest Vocabulary Matching
- Animals and Their Basic Needs
- Making New Trees

Thanks to Deborah Zierten, Education & Interpretation Manager for Save the Redwoods League for ensuring the accuracy of the information in this book.

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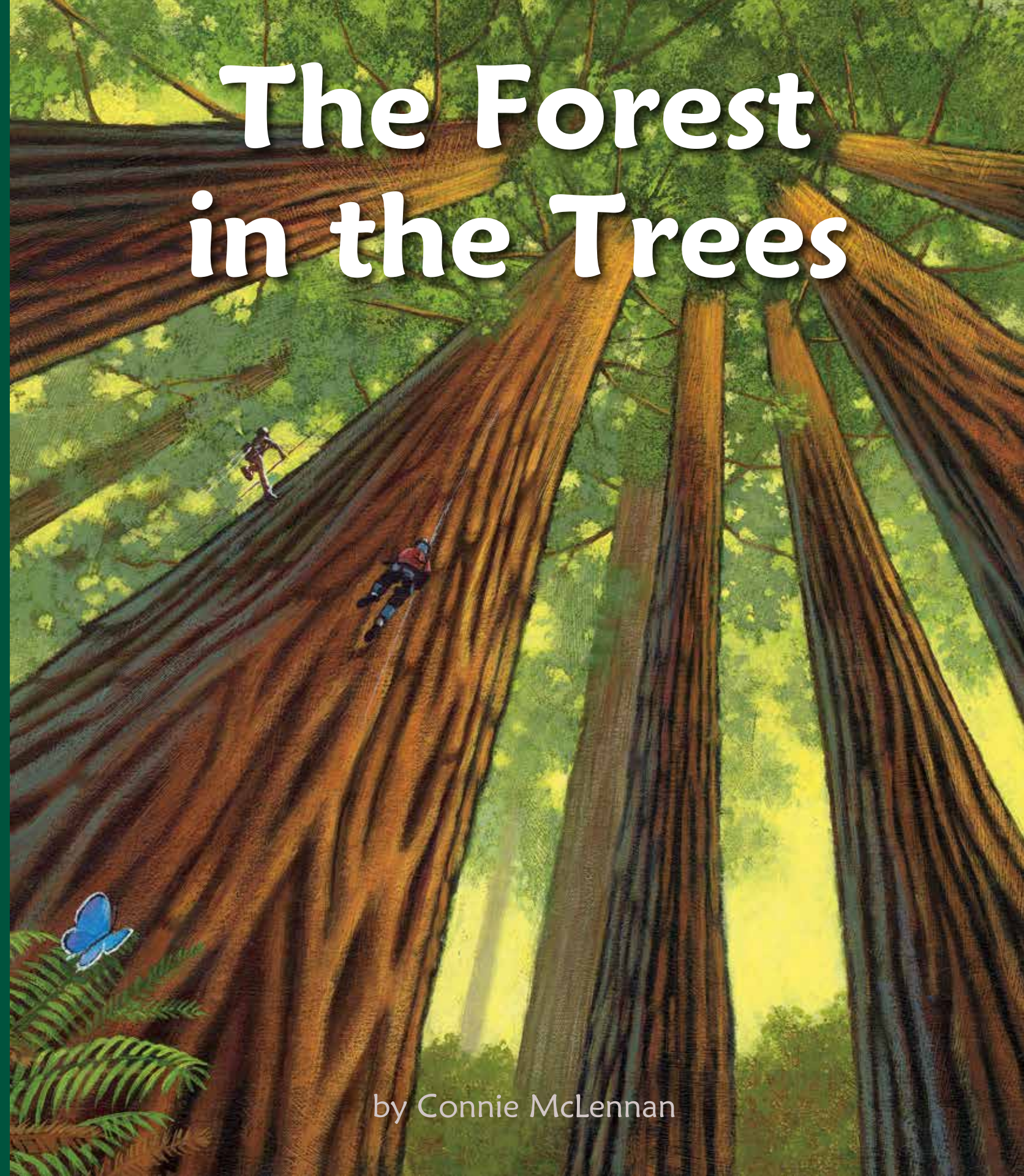


Connie McLennan has been an award-winning illustrator and fine artist for many years. The majestic beauty of the coast redwoods and recent discoveries about their canopy ecosystem inspired *The Forest in the Trees*, the first book Connie has both written and illustrated. Other Arbordale books she has illustrated include *The Rainforest Grew All Around*, *Water Beds: Sleeping In the Ocean*, *River Beds: Sleeping in the World's Rivers*, *Octavia and Her Purple Ink Cloud*, *Mother Osprey: Nursery Rhymes for Buoy & Gulls*, and *Ready, Set...WAIT! What Animals Do Before a Hurricane*. Connie lives in Northern California. Visit her website at www.conniemclennan.com.

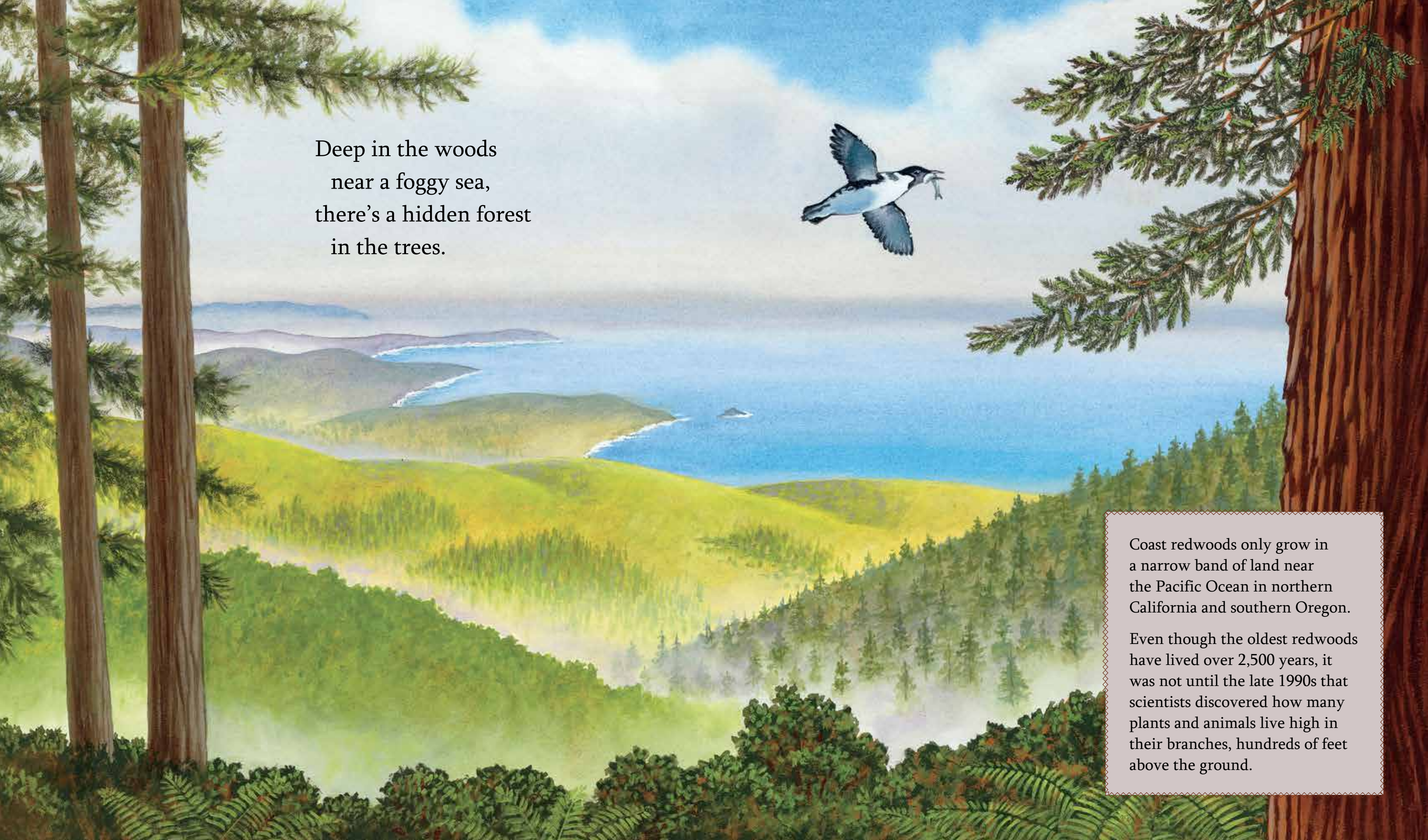


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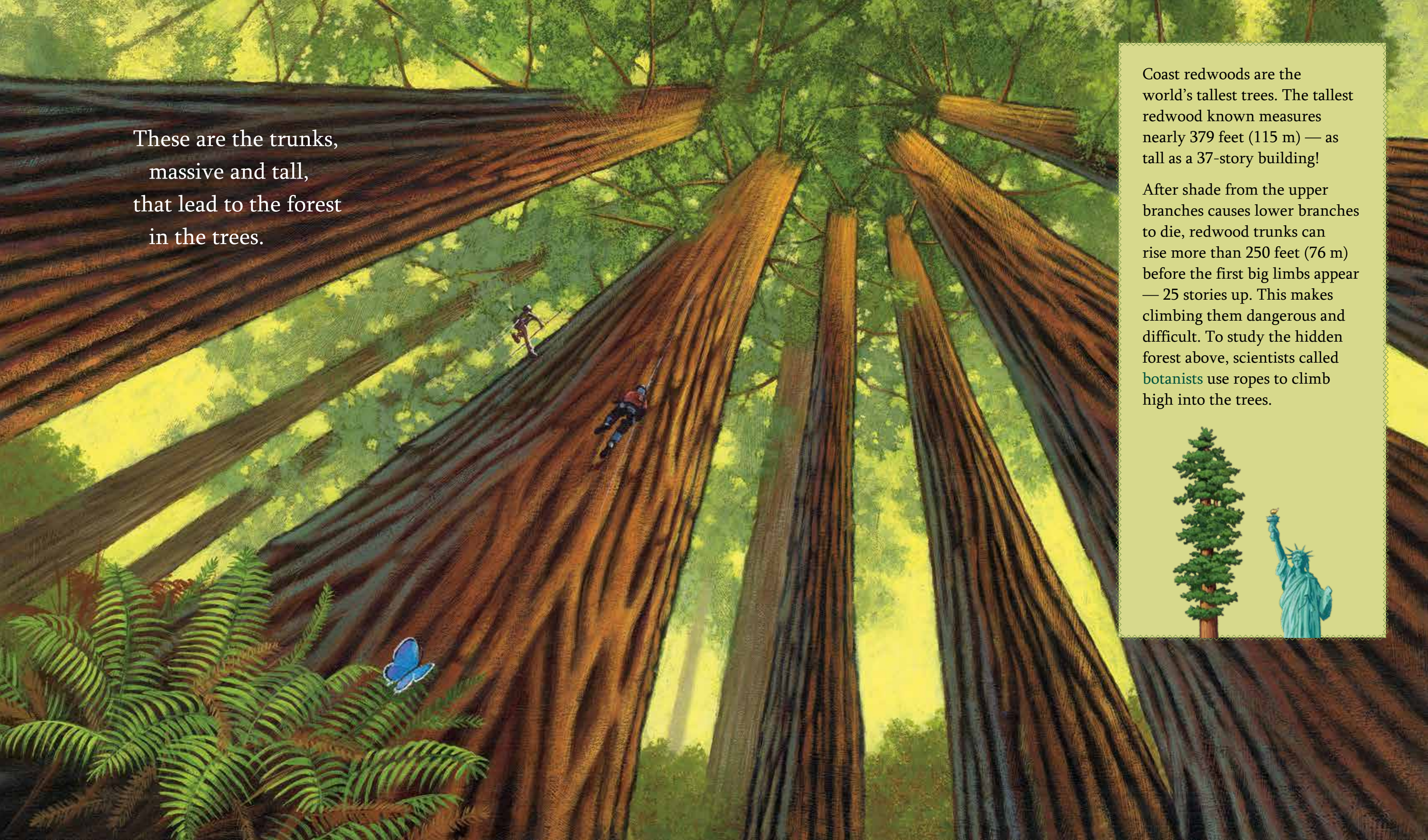
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Deep in the woods
near a foggy sea,
there's a hidden forest
in the trees.

Coast redwoods only grow in a narrow band of land near the Pacific Ocean in northern California and southern Oregon.

Even though the oldest redwoods have lived over 2,500 years, it was not until the late 1990s that scientists discovered how many plants and animals live high in their branches, hundreds of feet above the ground.

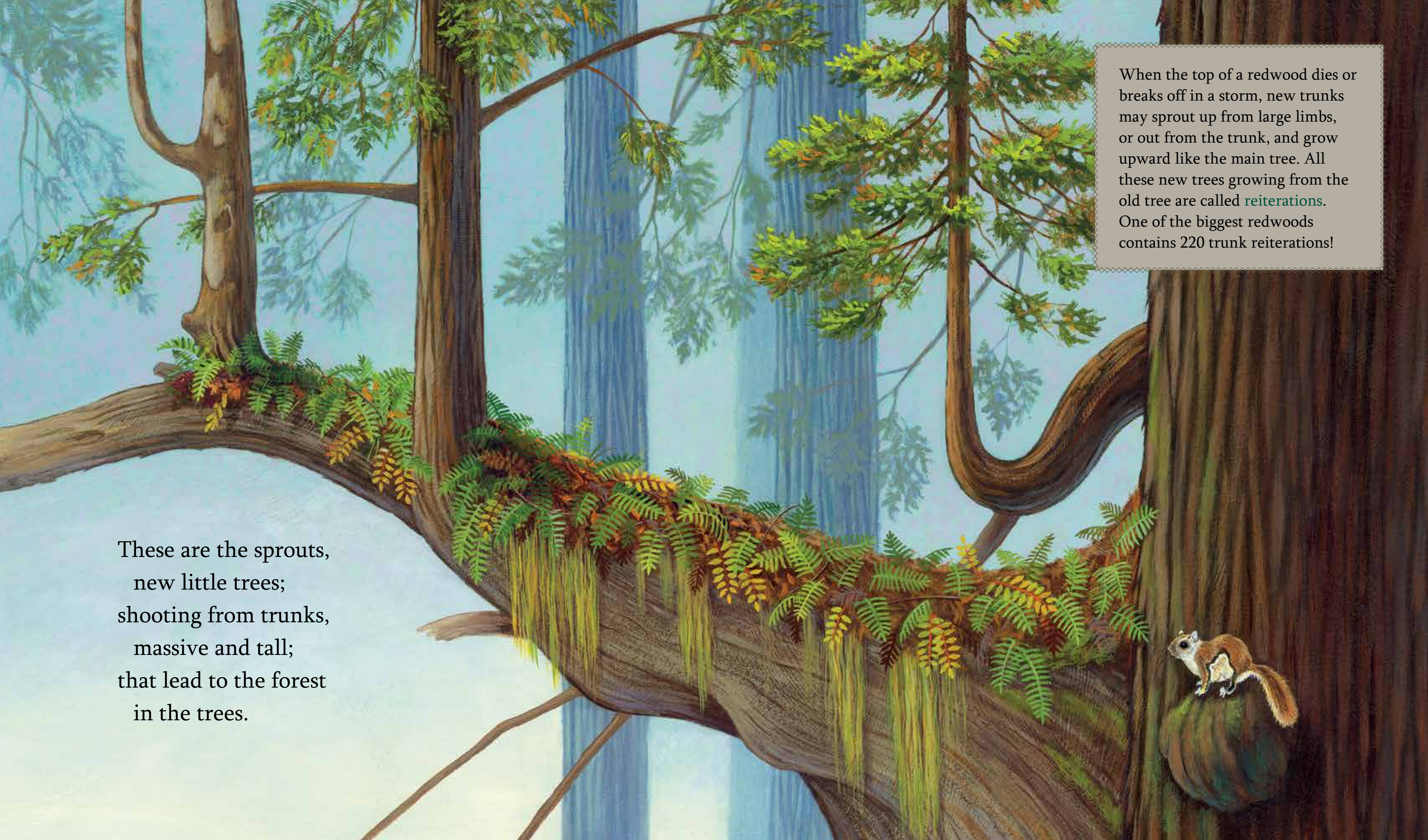


These are the trunks,
massive and tall,
that lead to the forest
in the trees.

Coast redwoods are the world's tallest trees. The tallest redwood known measures nearly 379 feet (115 m) — as tall as a 37-story building!


After shade from the upper branches causes lower branches to die, redwood trunks can rise more than 250 feet (76 m) before the first big limbs appear — 25 stories up. This makes climbing them dangerous and difficult. To study the hidden forest above, scientists called **botanists** use ropes to climb high into the trees.





These are the sprouts,
new little trees;
shooting from trunks,
massive and tall;
that lead to the forest
in the trees.

When the top of a redwood dies or breaks off in a storm, new trunks may sprout up from large limbs, or out from the trunk, and grow upward like the main tree. All these new trees growing from the old tree are called **reiterations**. One of the biggest redwoods contains 220 trunk reiterations!



This is the soil,
humid and deep;
collecting by sprouts,
new little trees;
shooting from trunks,
massive and tall;
that lead to the forest
in the trees.

The world at the top of the forest is called the **canopy**.

Fallen redwood leaves and twigs collect on limbs and in notches between trunks. Over time this debris breaks down to form sponge-like mats called **humus**. In places, layers of this organic canopy soil can be several feet (up to a meter) deep.



For Creative Minds

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Coast Redwood Habitat: Living or Nonliving?

Coast redwoods are native to a small area along the Pacific coast of northern California and southern Oregon. In all habitats and ecosystems, living things rely on both living things and nonliving things to survive. Can you identify which things found in the coast redwood habitat are living and which are nonliving?

Animals: From tiny insects to large black bears, a wide variety of animals live in and around the coast redwoods.

Water: This area has a moist climate that receives over 100 inches (2.5 m) of rain a year, plus fog from the ocean.

Temperature: Some plants grow in hot temperatures close to the equator (tropical), and others grow in cold temperatures far from the equator (polar). Between tropical and polar, temperatures are more temperate. The coast redwoods grow in a temperate climate.

Plants: Douglas firs, hemlocks, ferns, sorrels, mosses, and rhododendron can all be found in the understory of a healthy coast redwood habitat. Ferns, bushes, redwood sprouts, and even other kinds of trees can be found in the canopy.

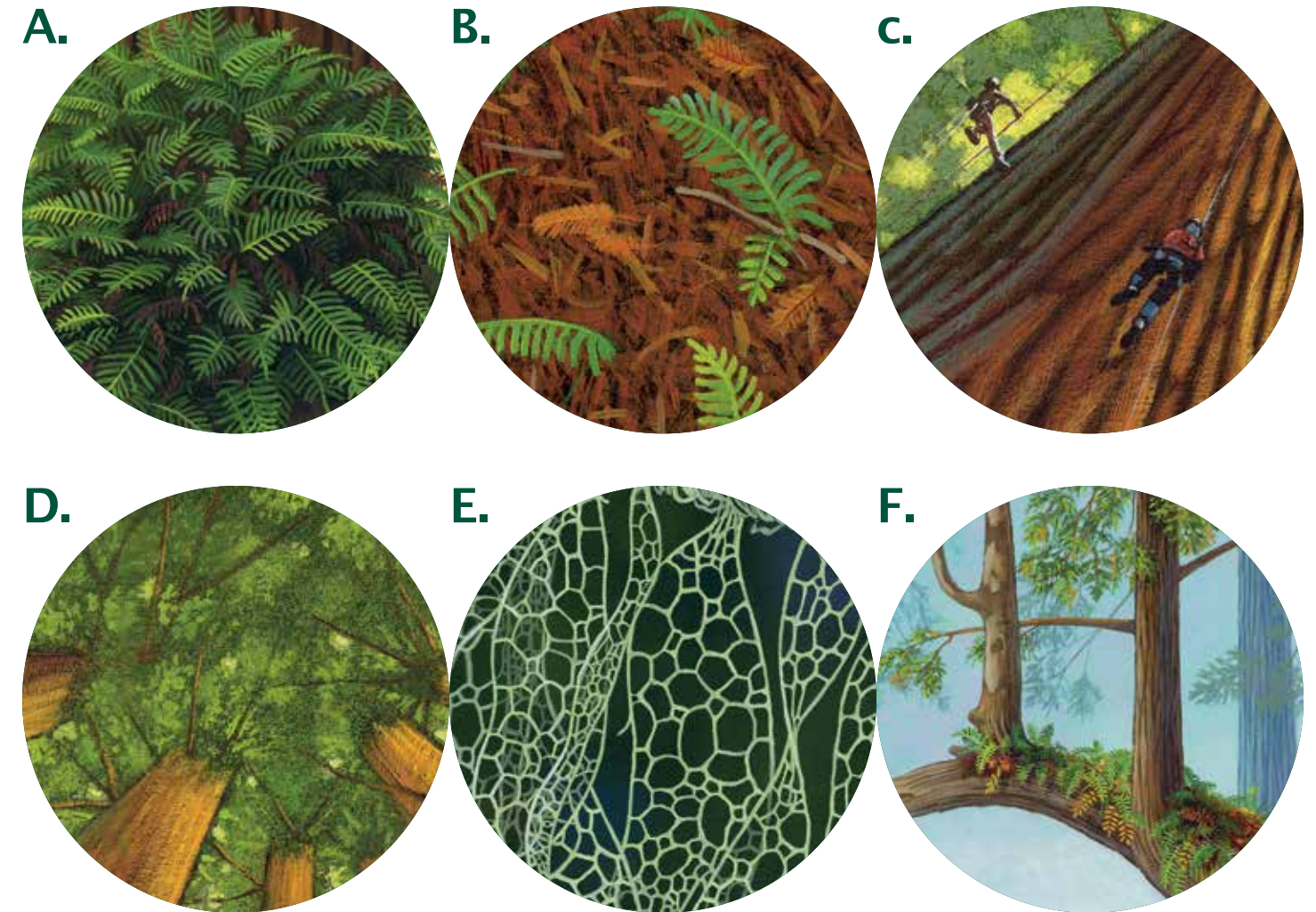
Soil: Decaying plants, including coast redwoods, provide nutrients to the soil that are then used by other plants.

Answers: Living: animals, plants; Nonliving: water, temperature, soil

Redwood Forest Vocabulary Matching

Match the vocabulary description to the image.

1. Trunks that grow from limbs growing from the main trunk are called **reiterations**.
2. The world at the top of the forest is called a **canopy**.
3. Sponge-like mats of soil are called **humus**.
4. Plants called **epiphytes** attach themselves to other plants to grow.
5. Over 150 different types of **lichens** grow in the redwood canopies. Lichens are actually two organisms growing together.
6. Scientists who climb and study trees are called **botanists**.



Answers: 1-F, 2-D, 3-B, 4-A, 5-E, 6-C

Animals and Their Basic Needs

Many types of animals make their homes high in the canopy, the secret forest of the coast redwoods. Match the animal adaptations to how they provide their basic needs:

- How they **protect themselves** from becoming food for other animals.
- How they find or get **food and water**.
- How they get **oxygen (air)** from their surroundings.
- Where they live and raise young (**shelter**).



Pill bugs often roll themselves into balls when disturbed. Because of that, they are sometimes called roly-polies. They breathe through gills.

Wandering salamanders breathe through their skin and mouths instead of lungs.

They eat tiny bugs crawling in the humus and camouflage themselves in the leaves to hide from predators.



During the day, Humboldt flying squirrels sleep in tree holes lined with soft moss or lichens. They glide from tree to tree at night searching for food.

Northern spotted owls catch prey in their talons. They nest in tree cavities, broken treetops, and in the old nests of hawks, eagles, and squirrels.



Marbled murrelets nest in shallow dips in moss and lichen high in the redwoods, far from their ocean home. Parents will carry fish from the ocean to their young several times a day.

Answers: protect themselves: wandering salamanders, pill bugs/roly-polies;
 food & water: wandering salamanders, Humboldt flying squirrels, northern spotted owls, marbled murrelets;
 get oxygen (air): pill bugs/roly-polies, wandering salamanders;
 shelter: Humboldt flying squirrels, northern spotted owls, marbled murrelets

Making New Trees

All living things make new living things (reproduce). Match the coast redwood reproduction description to the correct image.

1. A mature coast redwood makes up to 100,000 small **cones** in a year. Each cone is about an inch long (2.5 cm) and has 50 to 100 tiny seeds (about the size of tomato seeds). Few of its seeds ever grow into new trees because the dense forest is too dark and crowded.
2. Most coast redwoods reproduce by **stump sprouts** growing out of large outgrowths on the tree trunk called **burls**. When a coast redwood tree is stressed by fire, drought, wind or human activity, the burl sends out shoots that are copies of the parent tree!
3. If these burls grow all around the tree, and the parent tree dies, the remaining circle of trees is called a **fairy ring**.

A.



B.



Answers: 1-C, 2-B, 3-A

For my family with love and gratitude: my son Thomas, who read drafts and encouraged me to focus more quickly on the canopy, and husband Geoffrey, my “patron of the arts.” Thanks to Richard Preston, whose 2005 New Yorker article “Climbing the Redwoods” first inspired this book, and to Donna & Lee German at Arbordale Publishing for their support.—CM

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