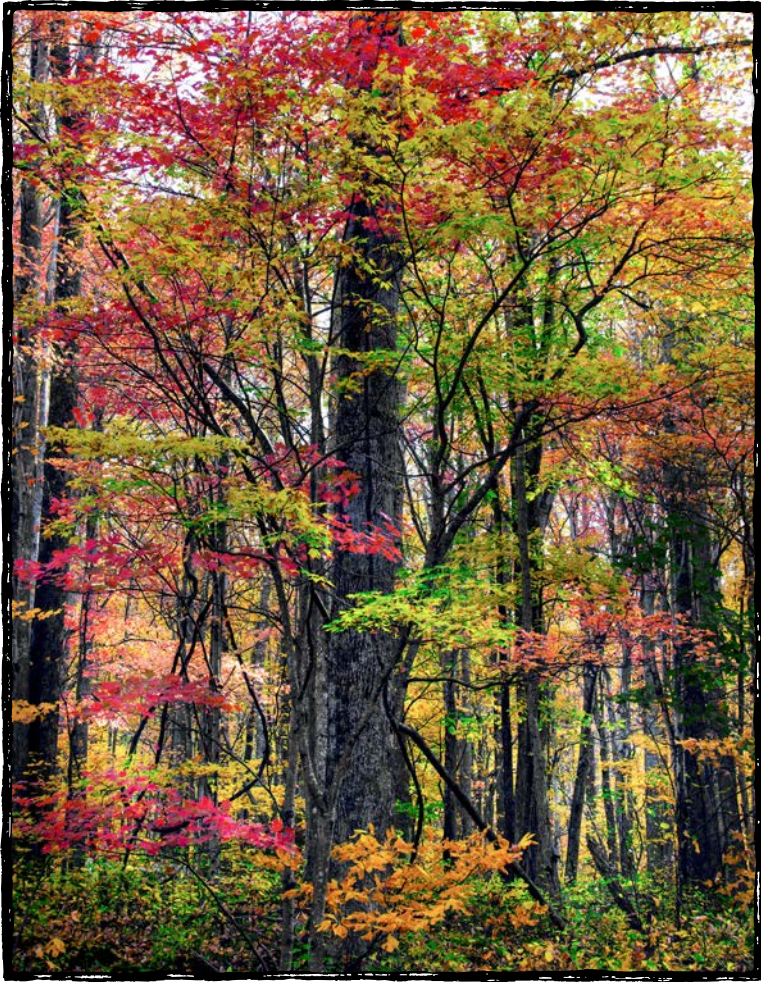


Woods of Wonder

A Reading A-Z Level R Leveled Book

Word Count: 877



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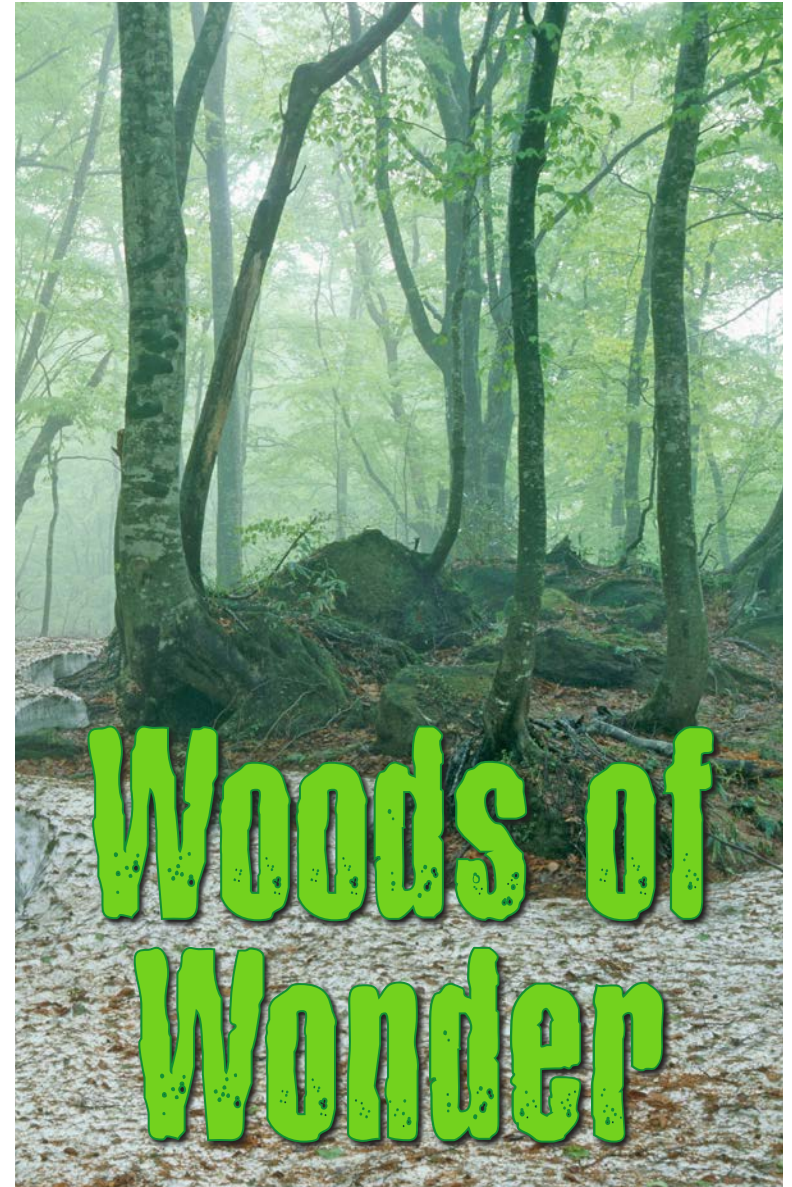
**Multi
level
L•O•R**

Written by Rus Buyok

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Glossary

canopy (<i>n.</i>)	the part of a forest where the tops of trees form a dense layer of foliage (p. 5)
coniferous (<i>adj.</i>)	referring to a large group of plants, mostly trees, that grow cones and have leaves shaped like needles or scales (p. 7)
deciduous (<i>adj.</i>)	having leaves that drop off in the fall and grow back in the spring (p. 7)
diversity (<i>n.</i>)	a wide variety of many things (p. 13)
ecosystems (<i>n.</i>)	communities of living things together with their habitat (p. 6)
endangered (<i>adj.</i>)	in danger of dying out completely (p. 10)
old-growth (<i>adj.</i>)	of or relating to very old forests (p. 4)
reserve (<i>n.</i>)	a place where wild plants and animals are protected (p. 13)
species (<i>n.</i>)	a group of living things that are physically similar and can reproduce (p. 5)



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Correlation

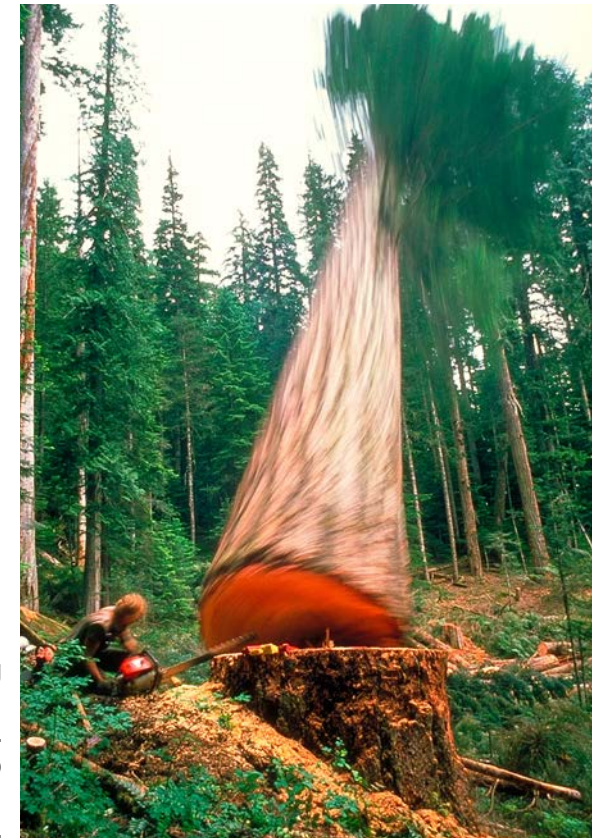
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The Future of Old-Growth Forests

Old-growth forests often contain very complex ecosystems that have been supporting life for hundreds or even thousands of years. Governments, national parks, and organizations protect many of these places. However, other old-growth forests, both small and large, are in danger. Human actions can damage or destroy these delicate ecosystems.

Once gone,
the beauty
and scientific
information
that these
old-growth
forests hold
may be lost
forever.

Laws prevent logging
in some old-growth
forests but not others.
People continue to
debate how much
protection is enough.





Snow leopards

A variety of endangered animals make their home in these forests. Some scientists think that a very small number of endangered snow leopards survive there. No sightings have been reported for years, but scientists still find signs of the large cats, such as paw prints and scat. The endangered wisent, or European bison, has also been returned to the forest. The last wild wisent was killed in the Western Caucasus in 1927. People set captive wisents free in the area in 1940.



Wisents

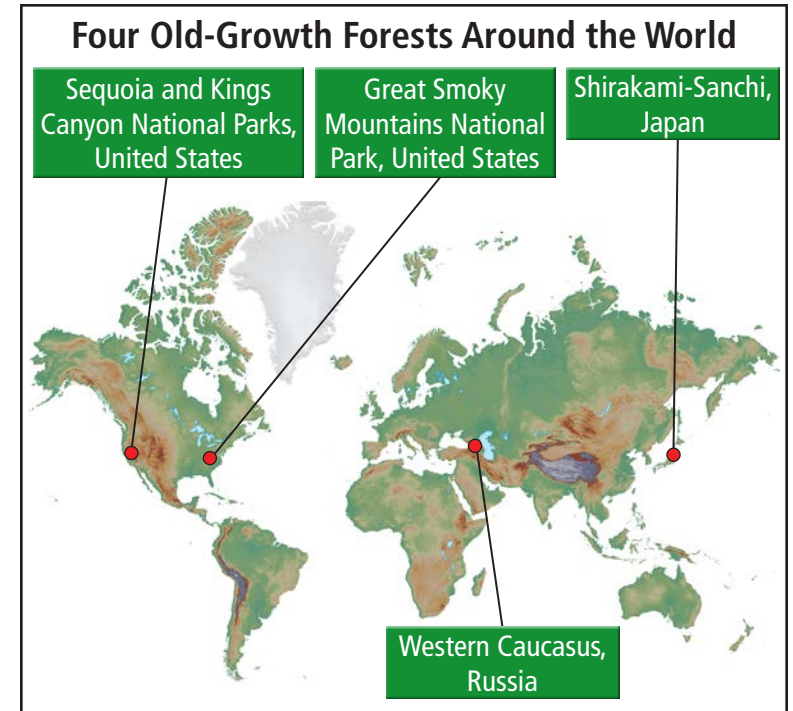


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Oh, That's Old!

Imagine you're in a dark, lovely forest. Trees with trunks wider than cars tower overhead and block almost all the sunlight. Small ferns and other plants soak up what little light they can find. Pine needles and other dead leaves cover the ground. Like something out of a fairy tale, an **old-growth** forest is a place of wonder and mystery.



Fallen trees like this fir can nurse along other plants in this old-growth forest in the Caucasus region of Russia.

Russia

Russia's Western Caucasus region stretches about 1,062 square miles (2,750 sq km) from the Black Sea to the Caucasus Mountains. Protected within Caucasus State Biosphere **Reserve** and Sochi National Park, this area shows great **diversity**. Coniferous trees make up most of the forests. Different species, such as pine, cedar, fir, and spruce—as well as beech and oak (both deciduous)—grow in different areas and at different elevations.

Almost completely untouched by humans, Shirakami-Sanchi has no trails or structures. Because of its steep slopes, no trees have been cut down. Wildlife within the area is protected, although hunters called *Matagi* are sometimes allowed to hunt bears as part of their religion.

The forest is also home to the Japanese serow. This goatlike animal is only found here and in two other small areas in Japan. More than 2,100 insect species and 87 bird species live in the forests—including the black woodpecker, an endangered species in Japan.



Japanese serow



Black woodpeckers

For some old-growth forests, this scene wouldn't be far from the truth. Others might look quite different. Some old-growth forests have only one type of tree, while others have many. Some may have trees that seem to touch the sky, while others have trees shorter than a house.

Because of this variety, scientists do not have one definition for old-growth forests. Still, they have found some features that many old-growth forests share.

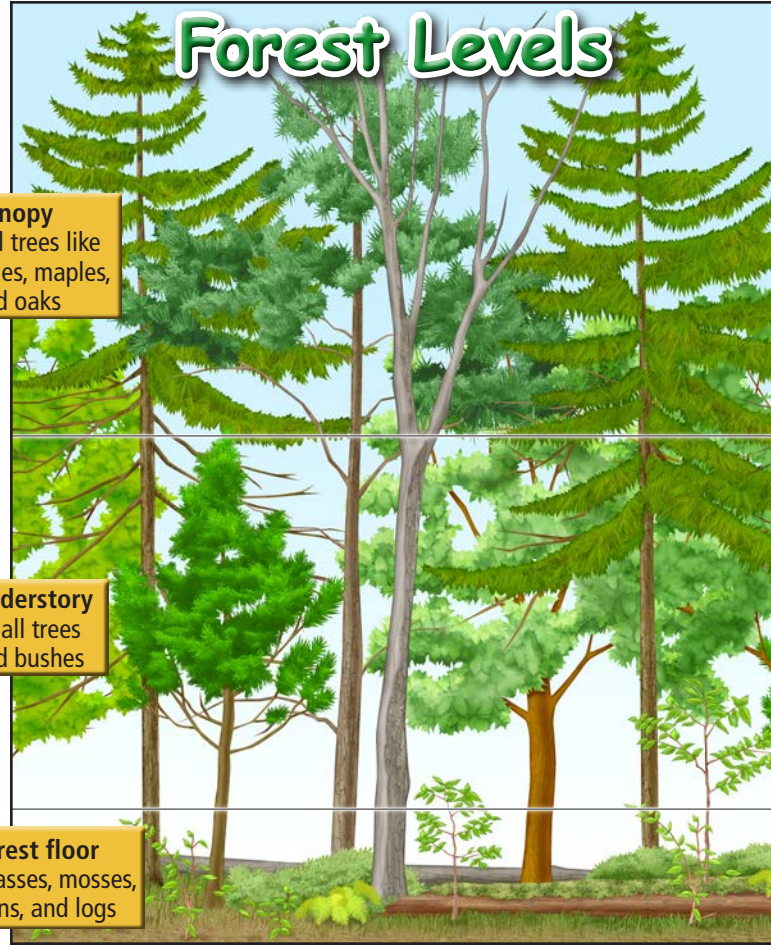
Many scientists agree that an old-growth forest must be at least 150 years old. The age of each tree in the forest may vary widely, however. The forest's structure must also be complex. This means that the **canopy** must have varying layers with large trees, both living and dead (or dying). Fallen trees create holes in the canopy where young trees can find the sunlight to grow. Fallen trees and upright dead trees, called *snags*, provide food and shelter for many animals, plants, and fungi. Some of these **species** live nowhere else on Earth.

Forest Levels

Canopy
Tall trees like
pines, maples,
and oaks

Understory
Small trees
and bushes

Forest floor
Grasses, mosses,
ferns, and logs



Old-growth forests are some of the most beautiful and scientifically interesting places on Earth. Yet because of humans, many of them have shrunk or disappeared. By carefully studying and protecting the ones that remain, we can understand the complex and delicate **ecosystems** they create.



A Seibold's beech tree reaches for the sun in Shirakami-Sanchi, Japan.

Japan

In the northern part of Japan sits Shirakami-Sanchi. It's one of the last untouched old-growth forests in East Asia. Made up mostly of Seibold's beech trees, the area covers just 65 square miles (170 sq km) of the Shirakami Mountains. Forests like this one once covered most of northern Japan, but many have been cut down.



Northern flying squirrel

The **endangered** Carolina northern flying squirrel makes its home among these trees. These small mammals don't actually fly. They use skin attached at their front and back paws to glide. They mostly eat fungi and lichens but may also feed on fruits and nuts. Without the old-growth forest, these animals would vanish.

Tough, Not Tall

Not all old-growth forests feature towering trees. In some harsh places exposed to fierce and frigid winds, pines, spruces, and other coniferous trees become stunted and twisted. These trees are called *Krummholz*, a German word meaning "crooked wood." They live near the Arctic and near timberline, the boundary on a mountain where the trees stop growing. They never grow much over 6 feet (1.8 m) tall, but don't let their size fool you: Some are one thousand years old.



United States

Sequoia and Kings Canyon National Parks in California together cover more than 1,353 square miles (3,504 sq km). They hold more than 300 square miles (777 sq km) of old-




The General Sherman Tree is the largest tree on the planet (but not the tallest).


growth forest. This forest includes a variety of tree species, mostly **coniferous** but **deciduous** as well. One of the most amazing of these is the giant sequoia. Found only in California, these huge trees are among the oldest on Earth. They can live for more than 3,000 years.

A giant sequoia known as the General Sherman Tree is the largest tree in the world.

Thousands of creatures live in the park, including the Pacific fisher. This relative of the weasel lives under the thick canopy in old-growth forests. It hunts birds and small mammals—but its favorite meal is porcupine. Because its habitat is limited to old-growth forests, it is now rare in California, Oregon, and Washington.



A close-up of a large sequoia tree trunk, showing its thick, textured bark. A white label with the word "Sequoia" is at the top left of the image.

A large redwood tree trunk, showing its thick, textured bark. A person is walking on a path next to the tree, providing a sense of scale. A white label with the word "Redwood" is at the top left of the image.

Sequoia vs. Redwood

Giant redwoods and giant sequoias both grow in California. They have the same color bark. Both are huge, but they're different.

Giant redwoods are the tallest trees in the world. They can reach up to 378 feet (115 m)! Giant sequoias are the largest. At up to 40 feet (12 m) in diameter, they can grow almost twice as wide as redwoods.

Redwoods grow best in fog. Sequoias need dry heat for their cones to open. Redwoods grow near sea level. Sequoias grow at 5,000 to 7,000 feet (1,524 to 2,134 m).



Autumn is colorful in Great Smoky Mountains National Park.

Across the United States in the Appalachian Mountains of North Carolina and Tennessee, Great Smoky Mountains National Park covers more than 800 square miles (2,072 sq km). Almost all of the park is forest, with old-growth forests only making up about 25 percent. Deciduous trees make up most of the old-growth forests in this area. Species include dogwood, Carolina silverbell, magnolia, American beech, yellow bird, and maple, among others.