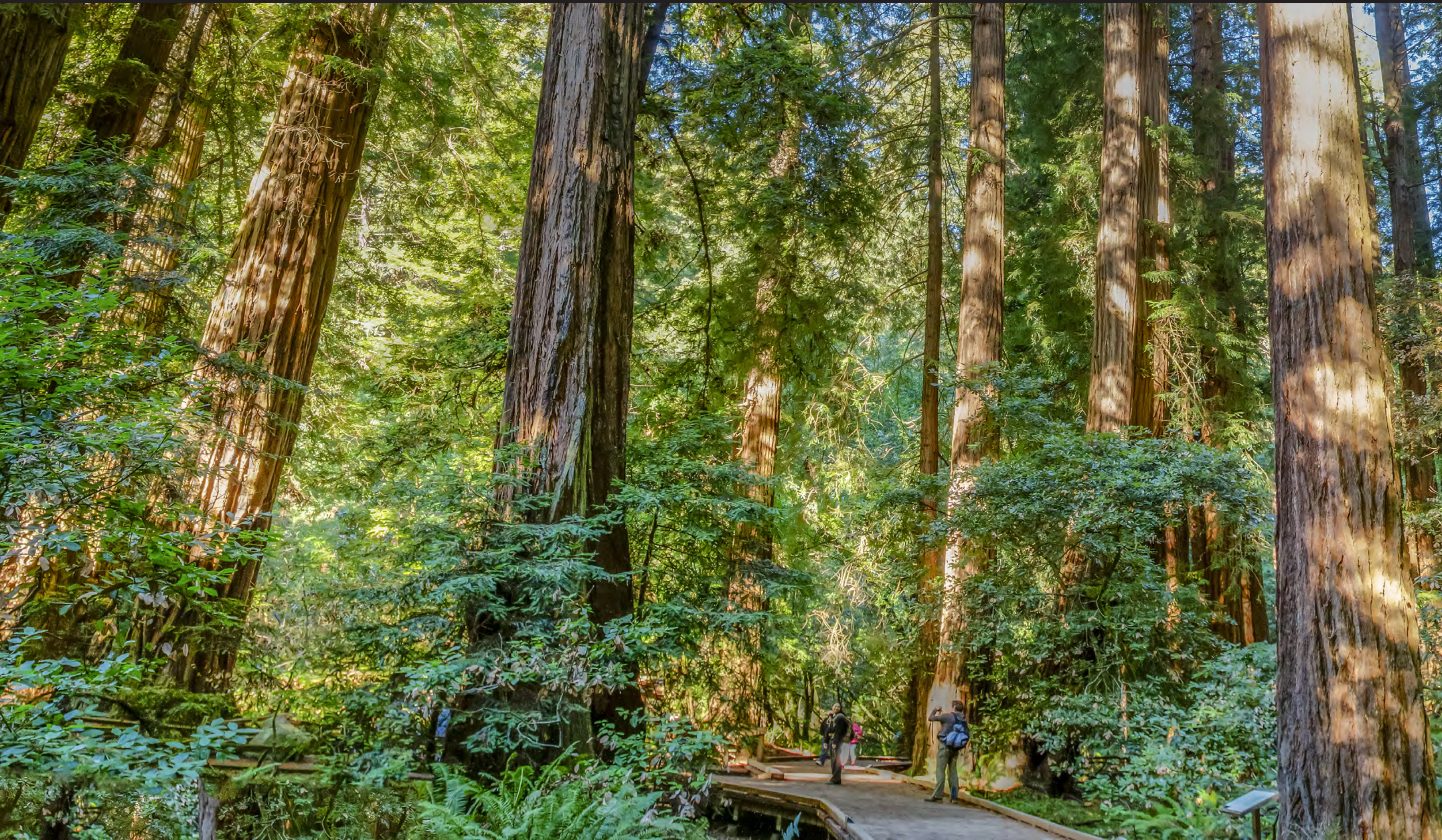


Muir Woods

National Park Service
U.S. Department of the Interior
National Monument
California



For nearly 200 million years, redwoods and their ancestors have nurtured a diverse community of life that survives here.



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Welcome to this rare ancient forest where coast redwoods reign, many over 600 years old. They have survived fires and floods, and avoided intense logging that took so many other redwoods. These old trees have provided shelter and nutrients for younger trees, other plants, and many animals. People have been coming here for thousands of years, finding plenty of food, shelter, and wonders to celebrate in their cultures. As you walk among the redwoods, breathe in deeply and reflect on this forest's history and future.



People of the Redwoods

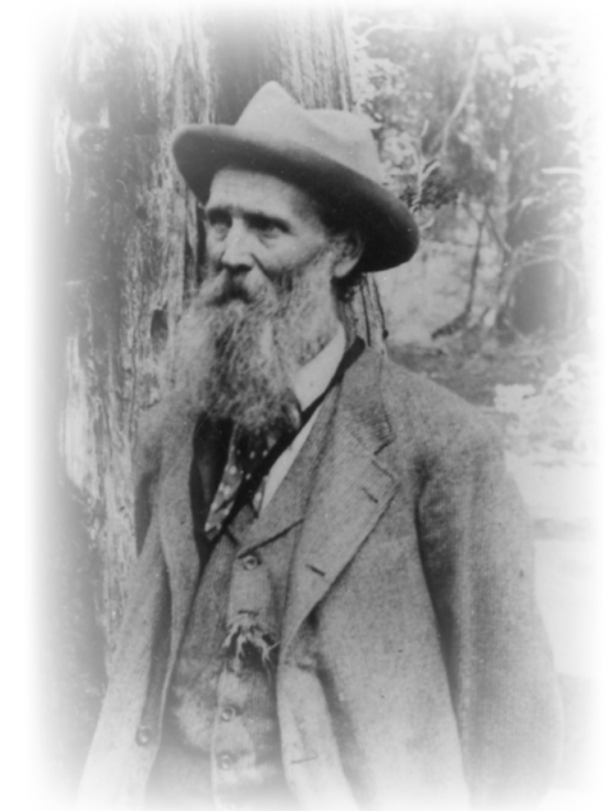
The Coast Miwok are the original people of this land. They lived throughout this area for thousands of years, managing the land and its natural resources. They set fires to enrich the forest and grasslands as natural fires did, shaping the forest now known as Muir Woods.

As Europeans arrived in the 1700s, they displaced native people from their lands and moved them into Spanish missions. Even here on the isolated Marin peninsula, Coast Miwok lost homeland, were enslaved, and died of mistreatment and European diseases. Ninety percent of the Coast Miwok had died by the time of California's gold rush in the mid-1800s.

New settlers found a different gold in these hills—the redwoods. Lumber was needed for forts, houses, and other structures. By the early 1900s, people had cut most of California's redwoods. This canyon, though, was never logged because its owners had protected it.

In 1908, William and Elizabeth Kent donated this small old-growth redwood forest to the public. President Theodore Roosevelt used the new Antiquities Act to proclaim the area a national monument. The park was named for John Muir, who wrote often about the beauty and value of ancient forests.

Today over one million people visit this rare, uncut redwood forest each year. The National Park Service works with many partners here. Descendants of the Coast Miwok, now members of the Federated Indians of Graton Rancheria, help with the park's care and management. The Golden Gate National Parks Conservancy supports volunteer activities, trail projects, education initiative and stewardship programs at Muir Woods.



When he found out the name of the new park, John Muir said, "This is the best tree-lover's monument that could possibly be found in all the forests of the world."

Exploring Your Park

Getting here Shuttle riders and people using personal vehicles must have reservations before arriving at the park. Details at www.gomuirwoods.com.

Muir Woods National Monument is open daily, 8 am to sunset. Stop by the visitor center to get trail and program information, and to take in exhibits.

What's your path? Enjoy a walk on the paved Redwood Creek Trail (also called Main Trail). Choose short, medium, or long loops. Other trails go deep into Muir Woods and Mount Tamalpais State Park.

Curious about the forest? Join a ranger-led program and dig into the forest's many stories. Young adventurers can earn their Junior Ranger badge.

Ready to explore more? Muir Woods is part of Golden Gate National Recreation Area, which includes Marin Headlands, Alcatraz, the Presidio, and Ocean Beach. Download the app at www.nps.gov/goga.

Stay safe and protect your park Wifi and cell service are not available. • Watch for stinging nettle, poison oak, and falling branches. • Do not feed or disturb animals. • Fishing is prohibited in Redwood Creek. • Do not mark or remove trees, flowers, or other natural features. • Go to the park website for more safety tips and regulations, including firearms.

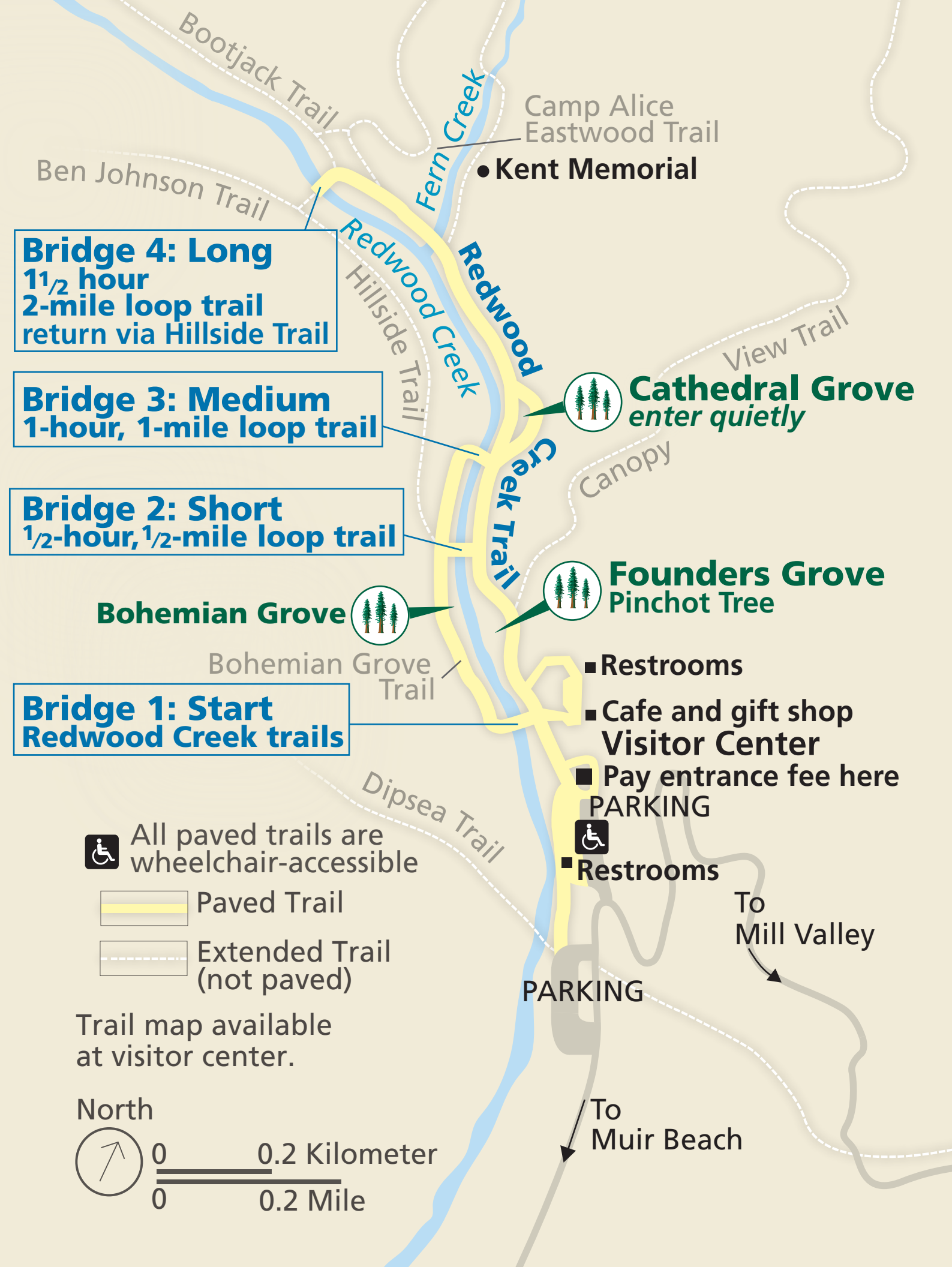
Emergencies call 911

Accessibility We strive to make facilities, services, and programs accessible to all. For information go to the visitor center, ask a ranger, call, or check our website.

More Information

Muir Woods National Monument
Mill Valley, CA 94941-2696

415-561-2850
www.nps.gov/muwo



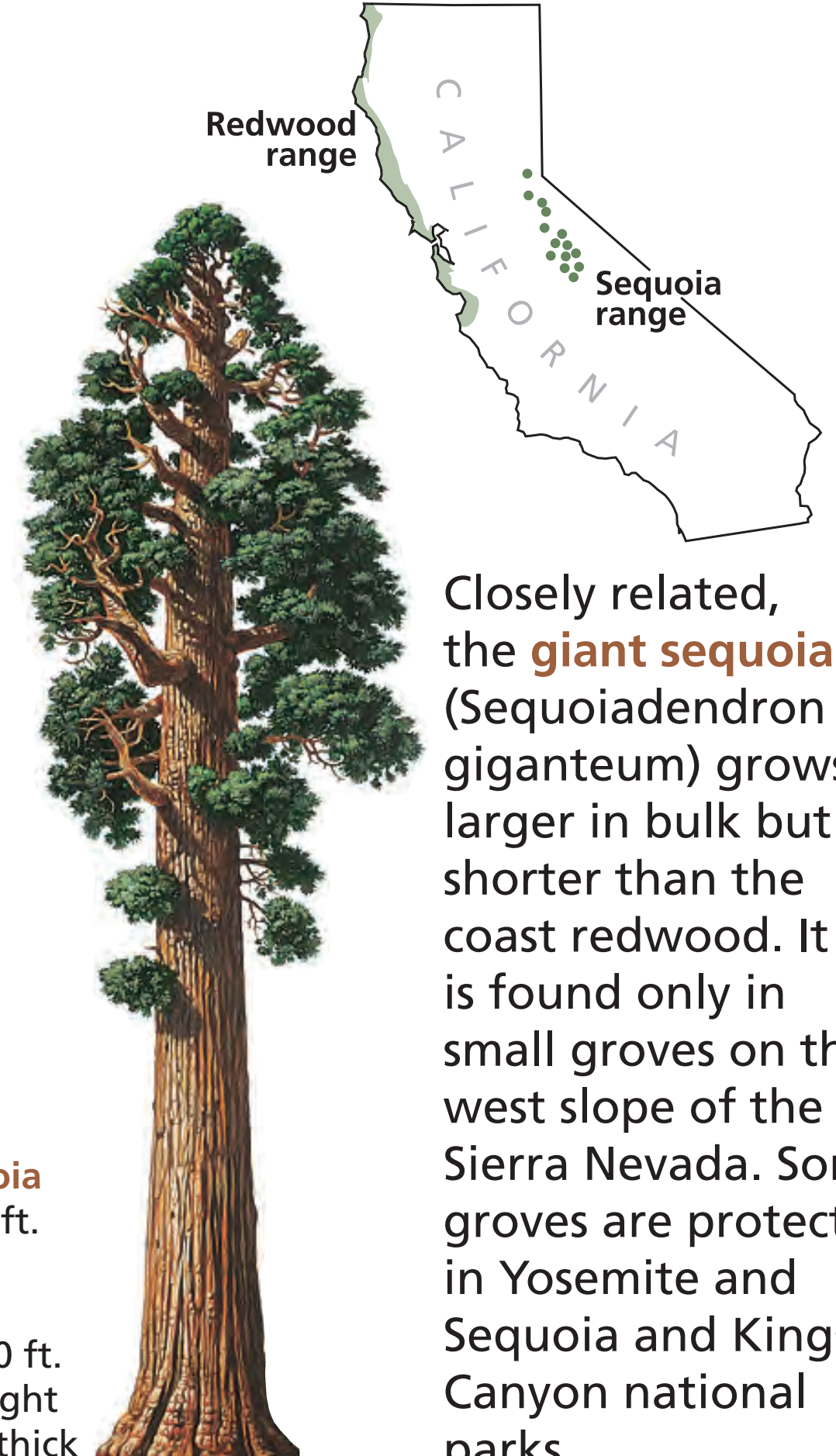
California Redwoods

Redwood-like trees covered much of the Northern Hemisphere 150 million years ago. Two species of redwood remain in the United States—both in California, both with very limited ranges. A third species, the dawn redwood, is native only to central China.

The **coast redwood** (*Sequoia sempervirens*) grows on the Pacific coast from southern Oregon into California (map). Most ancient coast redwoods have been cut, but some are protected in Redwood national and state parks, in other California and Oregon state parks, and here.



Coast redwood
Height 379 feet
Age 2,000 years
Diameter 22 feet at chest height
Bark 12 in. thick



Giant sequoia
Height 311 ft.
Age 3,200 years
Diameter 40 ft. at chest height
Bark 31 in. thick

Closely related, the **giant sequoia** (*Sequoiadendron giganteum*) grows larger in bulk but shorter than the coast redwood. It is found only in small groves on the west slope of the Sierra Nevada. Some groves are protected in Yosemite and Sequoia and Kings Canyon national parks.

Earth's Tallest Living Things

Steller's jay

NPS / WILL ELDER



Coast redwoods are the tallest living things on Earth. The tallest reaches 379 feet above the forest floor of Redwood National Park. In Muir Woods, the tallest is over 258 feet—about the height of a 23-story building.

They grow best in the moderate temperatures of the coast as long as they are protected from wind and salt spray. The tallest trees grow along streams, like Redwood Creek, that periodically flood.



Life of the Redwood Forest

Most of the mature redwoods here are 500 to 800 years old; some may be over 1,000 years old. They grow among rotting logs and thick undergrowth, creating a specialized habitat for many animals and plants. While here, consider ways these species are adapted to the low light and moist conditions of the redwood forest.

Redwood Creek adds to the diversity of life in this ancient forest, providing habitat for aquatic creatures like fish, insects, and salamanders. Winter rainstorms swell the creek enough that it breaks through the sand barrier at Muir Beach. This allows steelhead trout and coho salmon to swim from the ocean into the creek, where they spawn.

Sword fern
NPS

Redwood sorrel
NPS / JAMES S. MORLEY



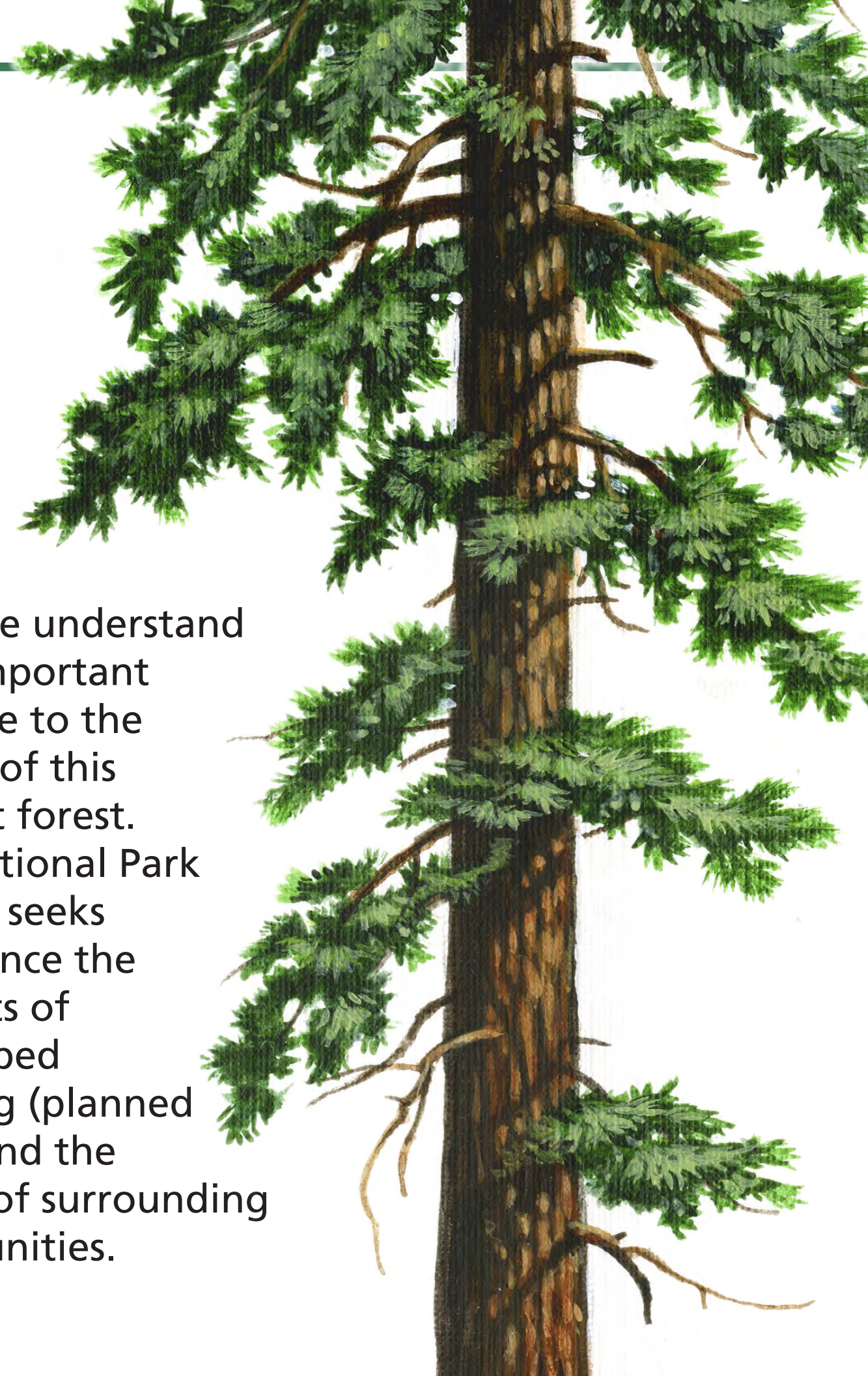
Roles of Fog and Fire

Fog Redwoods flourish only in coastal California's fog belt, where frequent summer fog supplies critical moisture in the dry season. As fog condenses on leaves and needles, the water drips to the forest floor and soaks in, becoming available to tree roots.

Fire Like fog, fire is essential to redwoods. Low-intensity fire clears out duff (decayed plants) so redwood seeds can reach the soil. Fire also destroys bacteria and fungi that kill seeds. Redwoods live through these fires due to their thick, spongy bark. Their bark also contains tannin, which makes them resistant to fire. However, extremely hot fires can burn through bark and expose heartwood to dry rot. Later fires may hollow out rotted portions, leaving blackened cavities you may see.

Natural fires, and low-intensity fires set by the Coast Miwok, burned here every 20 to 50 years until people began fighting them in the 1800s.

Now we understand how important fires are to the health of this ancient forest. The National Park Service seeks to balance the benefits of prescribed burning (planned fires) and the safety of surrounding communities.



As a Tree Grows

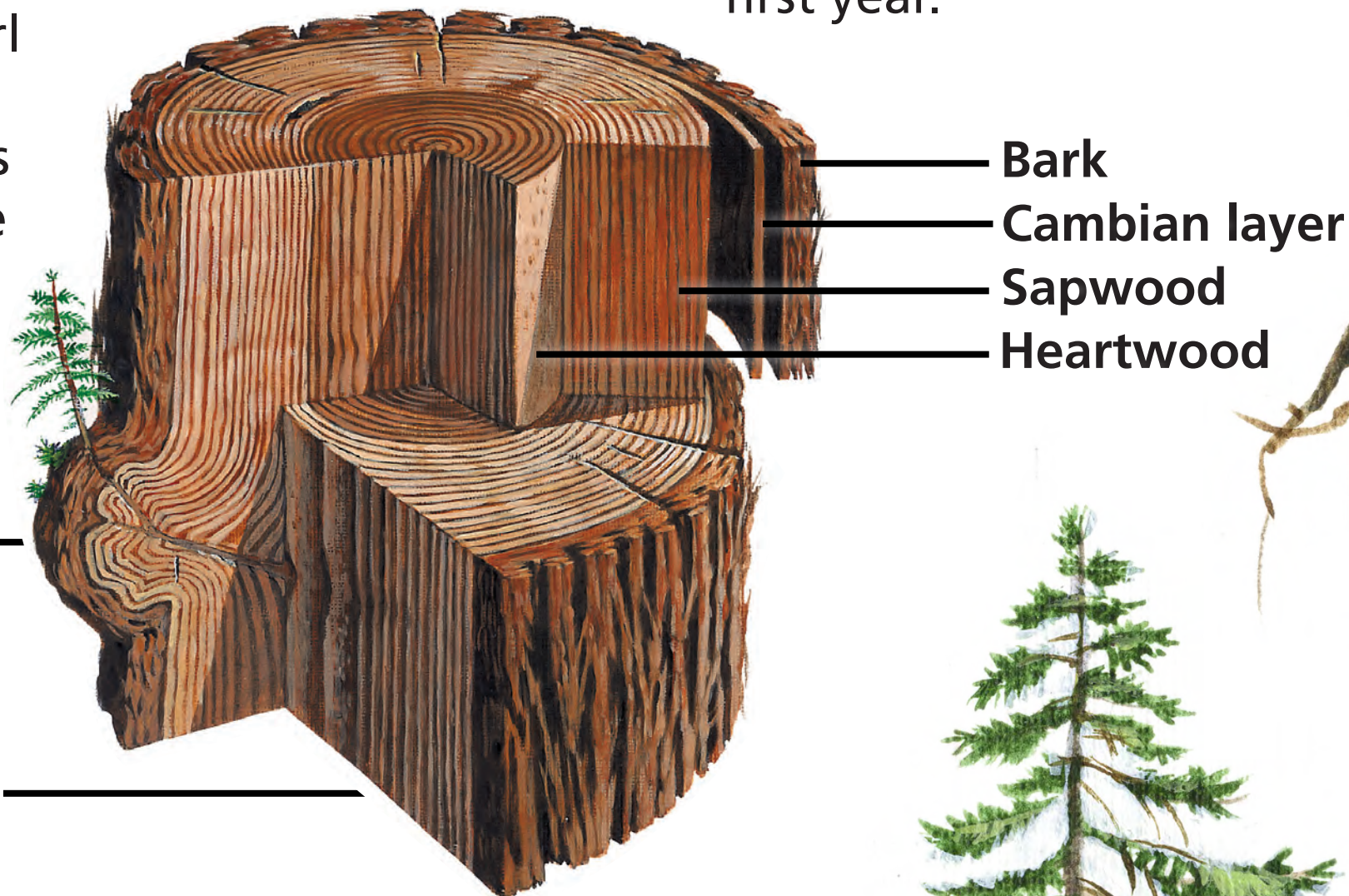
Annual rings Each year a tree's growth is recorded in a set of rings—one light, one dark. Wide rings show years of plentiful rainfall; narrow rings show drier years.

Burls and sprouting Look for tightly grouped redwoods or those fused at their bases. These trees probably began life as burl sprouts (above). A burl is a mass of dormant buds that grows on redwoods. When a tree is injured or tissue near a burl is affected, the burl may sprout. The sprouting gives redwoods great advantage over other trees that can reproduce only by seeds.

Cones and seeds Redwoods are conifers like pines and firs; they have cones and needles. The cone is reddish brown and about the size of an olive. A mature cone drops 50 to 60 tiny seeds in late fall. If a seed germinates, it may grow two to three inches in the first year.

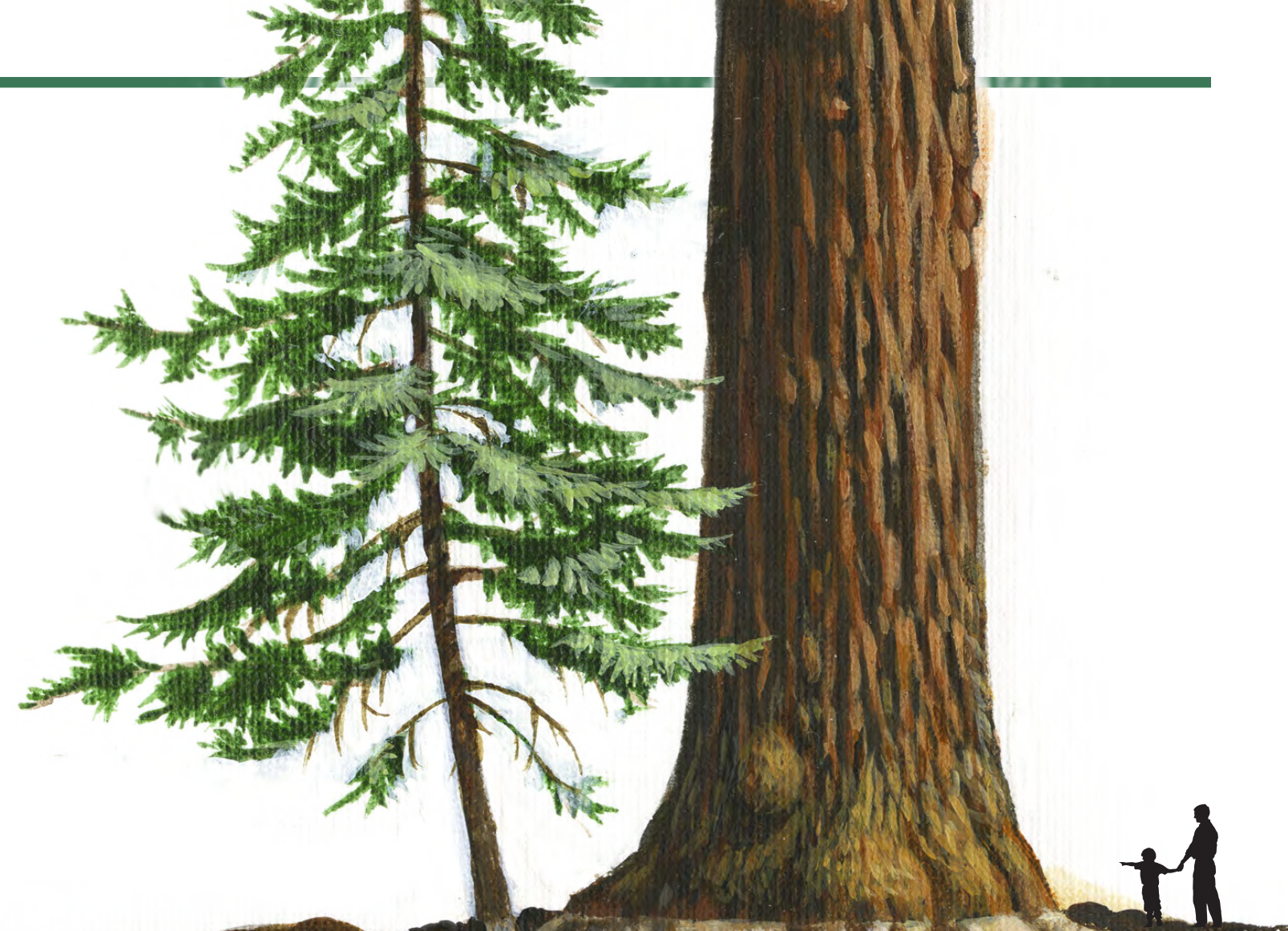
Burl with sprout

Annual rings





Will they keep growing? Coast redwoods come from ancestors that adapted through periods of slow, natural climate change. Today, human-influenced climate change is occurring much faster, and threatens long-term redwood survival. Scientists are already observing less frequent cool, foggy conditions. As you visit Muir Woods, what do you imagine for the future of this ancient forest?



Shallow Roots

A redwood's roots grow 10 to 13 feet deep and spread nearly 100 feet.