

Muir Woods

National Monument • California

Golden Gate
National Recreation Area

National Park Service
U.S. Department of the Interior



Color photographs by James M. Morley

William Kent's Legacy. Until the 1800s, many northern California coastal valleys were covered with coast redwood trees similar to those now found in Muir Woods National Monument. The forest along Redwood Creek in today's Muir Woods was spared from logging because it was hard to get to. Noting that Redwood Creek contained one of the Bay Area's last uncut stands of old-growth redwood, Congressman William Kent and his wife, Elizabeth Thacher Kent, bought 295 acres here for \$45,000

in 1905. To protect the redwoods the Kents donated the land to the Federal Government and, in 1908, President Theodore Roosevelt declared it a national monument. Roosevelt suggested naming the area after Kent, but Kent wanted it named for conservationist John Muir.

John Muir: Philosopher, Scientist, Author. Young John Muir's family emigrated from Scotland to Wisconsin in 1848. Muir had a lively interest in nature

and after brief studies at the University of Wisconsin he left school for what he would call "the University of the Wilderness." On his lengthy wanderings Muir contemplated man's relationship to nature, concluding that all life forms have inherent significance and the right to exist. Humans, Muir decided, are no greater or lesser than other forms of life. Muir eventually won public acceptance of conservation as an environmental ethic and inspired generations of wilderness advocates.

Life of the Redwood Forest

Each season at Muir Woods has its own character. Fall is warmest: ladybugs swarm, crayfish are active in Redwood Creek, and the leaves of big-leaf maple turn yellow and drop. During winter, steelhead (migratory rainbow trout) and silver salmon migrate up Redwood Creek to spawn, and toyon berries turn a vibrant red. In spring, birds nest, wildflowers dot Redwood Canyon, and blacktail deer birth spotted fawns. Summer is the season of fog, azaleas, aralias, buckeyes, Steller's jays, and chipmunks.

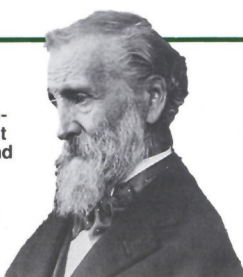


Blacktail deer

Animals. You may notice the relative silence in these woods. Animal life in a redwood forest is limited because the shaded conditions provide scarce food. Many animals that do live here feed at night, as owls and bats do, or in early morning and around dusk, as deer do. Mammals most often seen are the Sonoma chipmunk and blacktail deer.

"This is the best tree-lover's monument that could possibly be found in all the forests of the world. You have done me great honor, and I am proud of it."

— Muir to William Kent



You may hear the scolding of Steller's jays or the raucous cawing of ravens. Warblers, kinglets, and thrushes migrate, living here for part of the year. Wrens live here year round. Reptiles and amphibians are represented by western garter snakes, rubber boas, several species of lizards, salamanders, and newts.

Trees. Coast redwood trees dominate the forest. With them grow Douglas-fir, big-leaf maple, tanbark oak, and bay-laurel. At the lower end of the canyon, red alders line the stream and buckeyes cluster nearby. Shaded bays growing toward the light may assume contorted shapes or topple over.

Plants of the Forest Floor. Ferns are common forest associates of the redwood. Most common here are the sword fern, ladyfern, California polypody, and bracken fern. Moss and lichen grow on rocks and trees but are not parasitic. Redwood sorrel carpets much of the

canyon floor. Abundant mushrooms and fungi appear after rains. Magnificent shelf fungi can be seen year-round on both live and dead trees. Others, such as the vermilion hygrophorous and oyster mushrooms, appear only seasonally. Fields of primitive horsetail grow near the creek's banks.



Steller's jay

Redwood Creek. Redwood Creek originates high on the slopes of Mt. Tamalpais and nearly bisects the park. It runs year-round, providing nearby trees and animals with water and is host to diverse aquatic creatures, including fish, crayfish, and salamanders. In summer, the creek slows to a trickle connecting quiet pools, but winter rainstorms turn it into a raging torrent. Rain-swollen, Redwood Creek breaks through the sand barrier at Muir Beach and adult steelhead and silver salmon move up the creek to spawn.

☆ GPO:2000—460-976/00219 Reprint 1999
Printed on recycled paper.

Visiting Muir Woods

Muir Woods National Monument, 12 miles north of the Golden Gate Bridge, is reached by U.S. 101 and Calif. 1. Roads to the park are steep and winding; vehicles over 35 feet long are prohibited. No public transportation serves the park. Jack-ets are advised. The park is cool, shaded, and moist all year; daytime temperatures average 40° to 70°F. A visitor center and self-guiding nature trail are provided. A gift shop offers snacks and souvenirs. Find gasoline and services in Mill Valley five miles away.

Information. The park is open 8 a.m. to sunset year round. Aged 17 and up pay an entrance fee. Parking is limited; best times to visit are weekdays, mornings, and late afternoons. For information contact: Muir Woods National Monument, Mill Valley, CA 94941-2696; 415-388-2595; TTD 556-2766; or www.nps.gov/muwo on the Internet.

Help Protect Your Park. Muir Woods is a natural area. Please help us preserve and protect it. • Do not mar or remove flowers, trees, and other

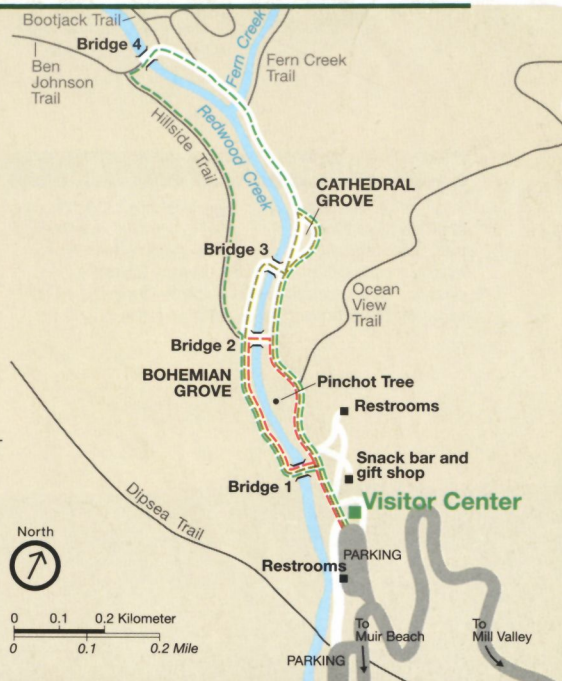
natural features. • Do not feed or disturb animals and do not fish. • Pets are not permitted except for seeing-eye dogs. • No smoking on trails. • Picnicking and camping are not allowed in Muir Woods, but facilities are provided nearby. • No bicycles or horses, except on fire roads. • Portable radios are prohibited. • **Danger: Poison oak and stinging nettle are common.** • **Proceed with caution during high winds, when branches or trees may fall.**

Redwood Canyon Loop Walks

Walk in Redwood Canyon to enjoy the Muir Woods forest. The 560-acre park includes six miles of trails. The main, mostly level trails on the canyon floor are paved. Bridges (1 to 4 on the map) make short loop walks possible. Unpaved trails out of the canyon connect with trails in Mt. Tamalpais State Park.

All paved trails are accessible to disabled visitors.

- Paved trail
- 1/2 hour loop walk
- 1 hour loop walk
- 1 1/2 hour loop walk
- Extended trails (unpaved)

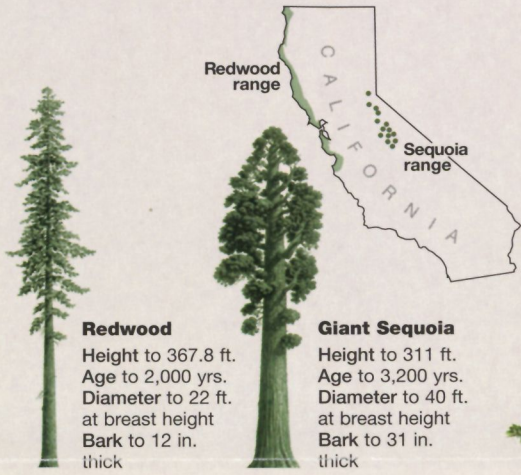


California Redwoods

Redwood-like trees covered much of the Northern Hemisphere 140 million years ago. As the climate changed, the range of the redwood retreated. Now there are two species of redwood in California, with very limited ranges. The coast redwood (*Sequoia sempervirens*) grows on a thin and discontinuous 500-mile strip of Pacific coast from southern Oregon to Monterey. Most old-growth coast redwoods have been cut, but some are protected in Redwood National and State Parks, many California and Oregon state parks, and here in Muir Woods. This canyon of redwoods was never logged. Its forest of mixed-age and dead trees supports a biologically rich community of plants and animals.

Closely related, the giant sequoia (*Sequoiadendron giganteum*) grows larger in bulk but is less tall than the

coast redwood. Giant sequoias can be seen in Yosemite and Sequoia and Kings Canyon national parks. Their range is restricted to small groves on the Sierra Nevada's west slope



Coast Redwoods: Tallest Living Things

Bohemian and Cathedral groves have the biggest trees in Muir Woods—one 252 feet tall and one 14 feet wide. Some are at least 1,000 years old. Most mature trees are

500 to 800 years old. Coast redwoods grow best in moderate temperatures and protected from the wind and salt spray. They need substantial soil moisture

from rainfall and summer fog and grow tallest on floodplains of streams that flood periodically.

The world's tallest living thing is a coast redwood

in Redwood National Park. One identified by the National Geographic Society in 1963 measured 367.8 feet tall.

Roles of Fog and Fire

Fog Redwoods flourish only along coastal California's fog belt where the frequent summer fog supplies critical moisture in the dry season. Condensing on needles and leaves, fog drips to the forest floor. It replenishes water that trees lose from evaporation and

transpiration. At Muir Woods winter is the wet season. Annual rainfall averages 40 inches.

Fire Fire benefits the forest's long-term ecological well-being. Fire clears the floor of duff so redwood seeds can reach mineral soil. It

destroys bacteria and fungi, found in the duff layer, which can kill the seeds before they germinate. Fire recycles nutrients, turning debris into ash, and it can enhance forage for wildlife. Research shows that before Europeans settled here, wildfire oc-

curred every 20 to 50 years in Muir Woods. Fire suppression since 1848 interrupted these natural cycles, with negative effects on the ecosystem. Muir Woods has instituted a prescribed burning program to re-establish fire's natural role in the forest.



Thick Bark

Its spongy and fibrous bark—from six to 12 inches thick—insulates the mature redwood against fire damage. Repeated hot fires can burn through the bark and expose heartwood to dry rot. Later fires may hollow out rotted

portions, creating the blackened cavities you may see along a park trail. A bitter chemical called tannin makes the tree's bark and wood resistant both to fire and to attacks by insects and fungi.

Cones and Seeds

Redwoods are conifers and evergreens. Mature cones are woody, reddish brown, and very small, about the size of an olive. Cones mature in a year and drop their seeds—50 to 60 tiny flakes per cone—in late fall. Within one month,

warm, moist soils may stimulate a seed to germinate. If a seed is on suitable, fresh mineral soil it will root. After first leaves appear seedlings begin to make their own food and may grow two or three inches tall in the first year.



Burls and Sprouting

In an established forest such as Muir Woods, burl sprouting accounts for most redwood reproduction. Burls are masses of dormant buds that

grow at the base, on the roots, or on the side of the coast redwood. A burl may sprout when the tree is injured or tissue near the burl is af-

fect. Sprouting gives coast redwoods great competitive advantage over trees reproducing by seed only. Tightly grouped trees or those

fused at their base probably began life as burl sprouts.

Shallow Roots
Roots penetrate only 10 to 13 feet deep, but they spread out 60 to 80 feet.

