Muir Woods

National Park Service
U.S. Department of the Interior

National Monument
California

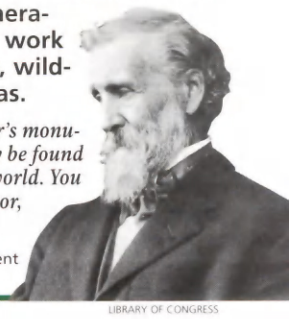
©JAMES M. MORLEY

William Kent's Legacy Muir Woods National Monument is a remnant of the coast redwood forests that blanketed many northern California coastal valleys before the 1800s. By 1900 this forest along Redwood Creek was one of the last uncut stands of ancient redwoods—spared because it was so difficult to reach. Local businessman William Kent and his wife Elizabeth Thacher Kent acted to protect the redwoods, buying land in the valley in 1905. To protect the forest more permanently, the Kents donated 295 acres of redwoods to the Federal Government, and in 1908 President Theodore Roosevelt proclaimed it a national monument. The President suggested that the area be named in honor of William Kent, but Kent asked that it be named for conservationist John Muir.

John Muir: Scientist and Author Young John Muir's family emigrated from Scotland to Wisconsin in 1848. Muir showed a lively interest in nature, and, after brief studies at the University of Wisconsin, he left school for what he would later call "the University of the Wilderness." During his lengthy wanderings Muir contemplated the relationship between humans and the rest of nature, concluding that all life forms have inherent value and a right to exist. He believed humans are no greater or lesser than other forms of life. His writings brought broad public acceptance of conservation as an environmental ethic. Muir has inspired generations of advocates to work to protect wilderness, wildness, and natural areas.

"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."

—John Muir to William Kent



LIBRARY OF CONGRESS

Life of the Redwood Forest

Ancient Redwood Forest Coast redwoods dominate this cool moist forest. Trees of all ages, including many more than 600 years old, stand along with dead, standing snags, rotting logs, and diverse undergrowth. This special forest environment provides habitat for a range of diverse plant and animal life that includes several species that are listed as rare and endangered.

Redwood sorrel ©JAMES M. MORLEY

Shade-loving undergrowth thrives under the redwood canopy. Redwood sorrel, sword ferns, and mosses stay cool and moist. Bay-laurels and big-leaf maples lean towards pockets of sunlight. On hillsides, large Douglas firs challenge the redwoods in height. Throughout the forest, delicate wildflowers like trillium, clintonia, redwood violet, and redwood sorrel grace the forest floor in winter and early spring.

Animals seem elusive in the quiet redwood forest. Many, like owls and bats, emerge mostly at night, while others, like deer and raccoons, are most active at dawn and dusk. Some birds—warblers, kinglets, and thrushes—migrate through Muir Woods, but winter wrens live here year-round. Reptiles and amphibians like western garter snakes, rubber boas, and California giant salamanders are a rare sight, but slimy bright banana slugs are abundant during the rainy season. Most commonly seen are the Steller's jay, Sonoma chipmunks, and grey squirrels. More rarely seen are the endangered spotted owls or the threatened steelhead and silver salmon.

Redwood Creek Watershed 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, insects, 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.

An Ecological Treasure Muir Woods National Monument and the Redwood Creek watershed are a part of Golden Gate International Biosphere Reserve—one of the planet's most rich and most threatened reservoirs of plant and animal life. Being near San Francisco, Muir Woods each year plays host to nearly one million visitors from all around the world, providing a window into the complex world of wilderness and conservation.

Steller's jay ©JAMES M. MORLEY

Visiting Muir Woods

Muir Woods National Monument, 12 miles north of Golden Gate Bridge, is reached by U.S. 101 and Calif. 1. Parking is limited: try visiting on weekdays or in morning or late afternoon. Approach roads are steep and winding; vehicles more than 35 feet long are prohibited. No public transportation serves the park. Jackets are advised: 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. The park is open 8 a.m. to sunset all year. Ages 17 and up pay entrance fees. Managed by Golden Gate National Recreation Area, Muir Woods National Monument is one of more than 380 parks in the National Park System. The National Park Service cares for special places saved by the American people so all may experience our heritage. For more information about parks and programs in America's communities, visit www.nps.gov.

More Information
Muir Woods
National Monument
Mill Valley, CA
94941-2696
415-388-2595
TTY 415-556-2766
www.nps.gov/muwo

Protect Your Park
Please help preserve this natural area.
• Help keep wildlife healthy: don't feed or disturb them. Fishing is prohibited in Redwood Creek. • Don't mar or remove flowers, trees, or other natural features. • No smoking on trails. • No horses or bicycles except on fire roads. • Portable radios are prohibited. • Picnicking and camping are not allowed, but facilities are provided nearby. • Pets are not permitted, except service dogs.

Danger: Poison oak and stinging nettles are common. • During high winds branches or trees may fall.

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

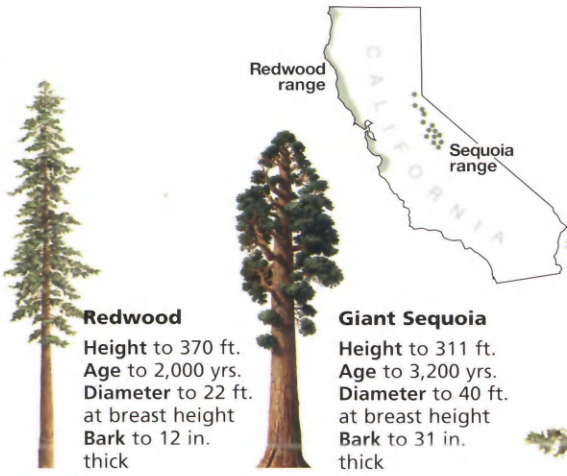
☆GPO:2004—304-337/00074 Reprint 2004
Printed on recycled paper.

All paved trails are wheelchair accessibile.
Paved trail
½ hour, ½ mile loop walk
1 hour, 1 mile loop walk
1½ hour, 2 miles 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 ancient coast redwoods have been cut, but some are protected in Redwood National and State Parks, in 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 west slope of the Sierra Nevada.



Redwood
Height to 370 ft.
Age to 2,000 yrs.
Diameter to 22 ft. at breast height
Bark to 12 in. thick

Giant Sequoia
Height to 311 ft.
Age to 3,200 yrs.
Diameter to 40 ft. at breast height
Bark to 31 in. thick

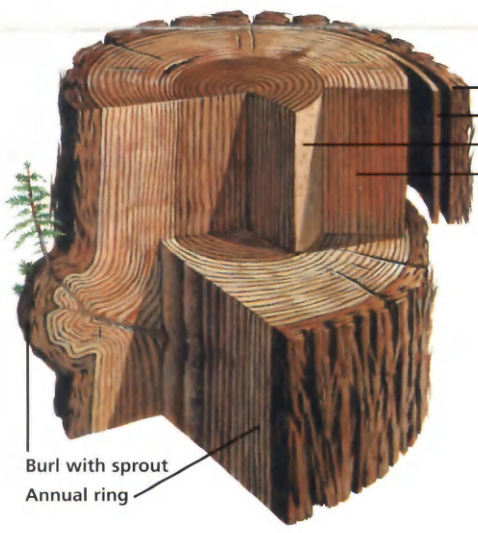
Coast Redwoods: Tallest Living Things

Bohemian and Cathedral groves have the biggest trees in Muir Woods. The tallest is more than 252 feet and the widest more than 14 feet. Some redwoods 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 the floodplains of streams that flood periodically. The world's tallest living thing is a coast redwood in northern California. One identified in 1963 by the National Geographic Society was 367.8 feet tall.

Roles of Fog and Fire

Fog Redwoods can flourish only in coastal California's fog belt, where frequent summer fog supplies critical moisture in the dry season. Condensing on leaves and needles, fog drips to the forest floor and replenishes water that trees lose to evaporation and transpiration. Winter is the wet season, and rainfall averages 40 inches per year.

Fire Fire benefits the long-term health of a forest. Fire clears the floor of duff so redwood seeds can reach mineral soil. Fire destroys bacteria and fungi in the duff layer that can kill seeds before they germinate. It recycles nutrients, turns debris into ash, and can enhance wildlife forage. Before fire suppression—begun in the 19th century—upset natural cycles, wildfire occurred every 20 to 50 years here. To restore the ecosystem's integrity the National Park Service conducts prescribed burning to reestablish 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 the heartwood to dry rot. Later fires may hollow out rotted portions—the blackened cavities you may see beside the trail. A reddish-brown, bitter chemical, tannin, gives the tree its name. Tannin makes both bark and wood resistant to fire and to attack by insects and fungi.

Cones and Seeds

Redwoods are conifers and evergreen. Mature cones are woody, reddish brown, and small, olive-sized. Cones mature in a year and drop seeds, 50 to 60 tiny flakes per cone, in late fall. Within one month, warm, moist soil may stimulate a seed to germinate. If it is on suitable, fresh mineral soil it may root. After the first leaves appear, a seedling begins making its own food and may grow to two or three inches tall in its first year of life.

Burls and Sprouting

In established forests like Muir Woods, burl sprouting accounts for most reproduction of redwoods. A burl is a mass of dormant buds that grows at the base or on the roots or side of redwoods. When a tree is injured or tissue near a burl is affected, the burl may sprout. The sprouting gives redwoods great competitive advantage over other trees that can reproduce by seed only. Tightly grouped redwoods, or those fused at their bases, probably began life as burl sprouts.

ALL ILLUSTRATIONS NPS/JOHN DAWSON

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