

SHOULD I GROW A redwood?

You decide. But since coast redwoods do not naturally grow here in the Central Valley, it's important to learn more.

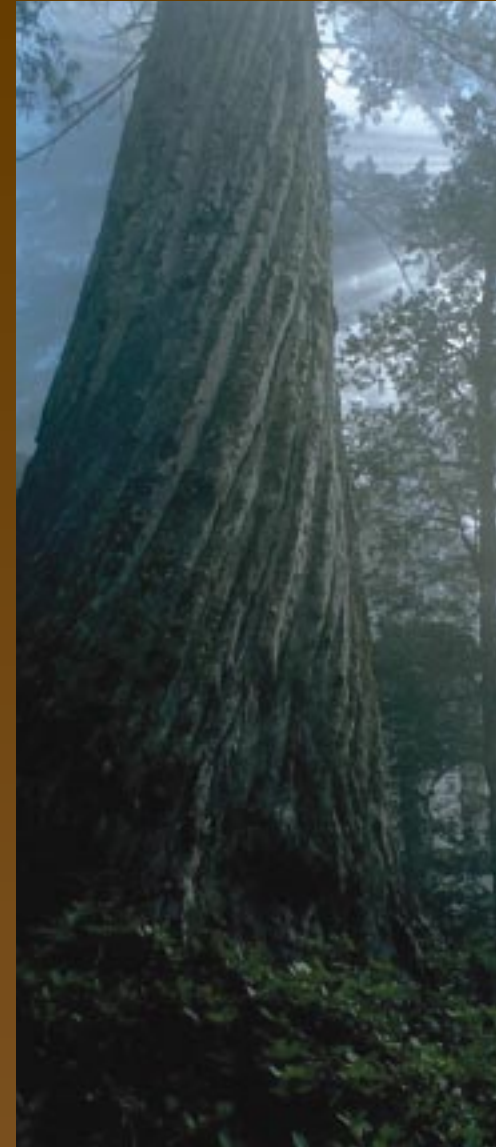
to grow...

- Long-living, attractive trees with few diseases
- Provide shade for cool summer refuge
- Fast-growing trees provide privacy and wind screen (grow up to five feet per year)
- Once redwoods are established (after five years), need less watering
- Fallen leaves on ground dampen noise
- Plant near a lawn for easy watering, but over time, redwood will shade out lawn



or not to grow

- Redwoods are very large (up to 50 feet tall, 15 feet diameter canopy) and need sufficient room to grow
- May need to have the top cut off to clear power lines
- Redwoods are high water users and will always need extra summer water; young trees need water year round
- Redwoods keep leaves all year and block sun in winter
- Boron in local water turns needles brown
- Redwoods planted here never look as healthy as they do on the coast
- Redwoods need well-drained soil so roots can get oxygen



Robert Potts © California Academy of Sciences

Can you imagine
this in your yard?

T. Elliot Weier Redwood Grove



How Much Do You Know About redwoods?

Test Yourself and See!

How tall do coast redwood trees grow?



Do coast redwood trees grow naturally all over the world?



Why are coast redwoods so popular as a source of lumber?



Do coast redwood trees grow naturally on the UC Davis campus?



Is the coast redwood the same tree as the giant sequoia?



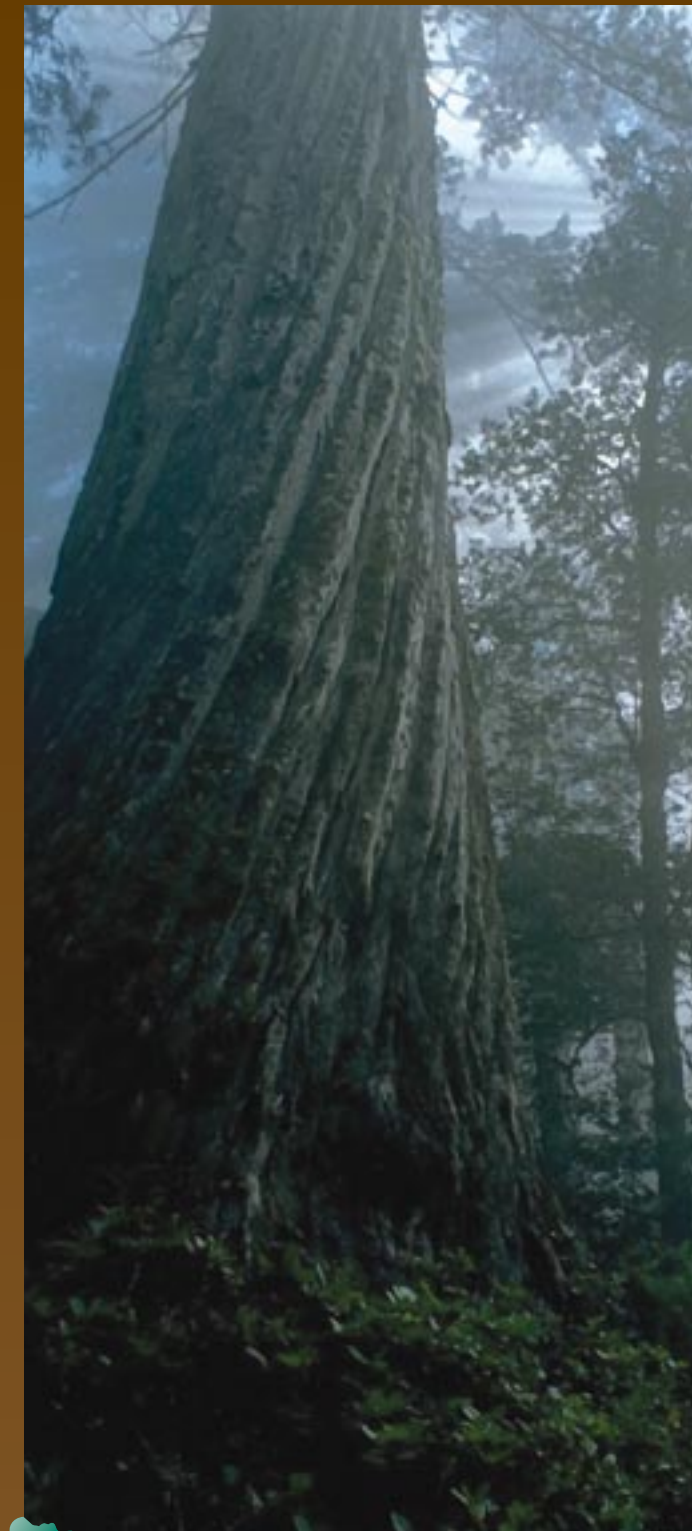
How long can coast redwood trees live?



How fast do coast redwood trees grow?



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How Much Do You Know About redwoods?

Test Yourself and See!



Coast redwoods can grow over 350 feet tall.

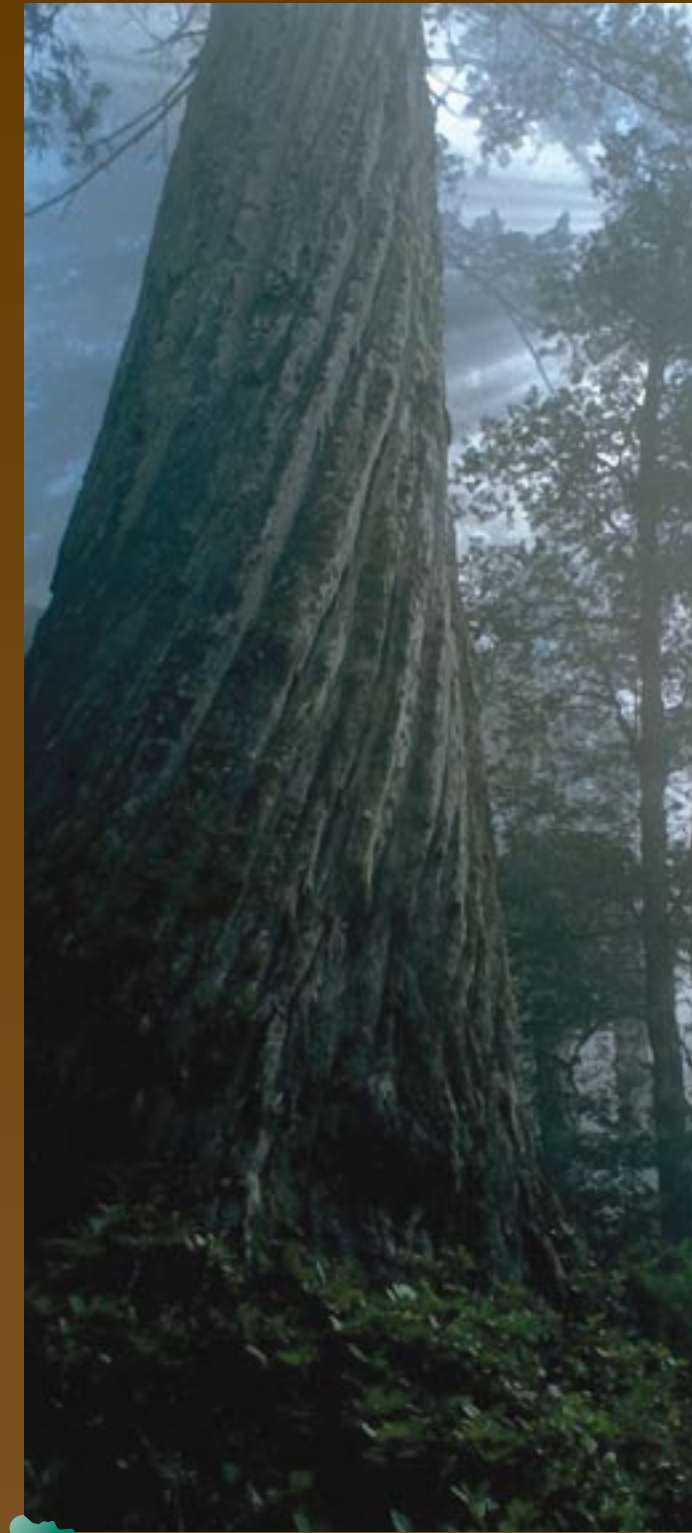
They are the tallest trees in the world! The tallest trees are taller than the Statue of Liberty and the nation's capitol building.

Coast Redwood
Statue of Liberty
National Capitol Dome



Coast redwoods can live longer than 2,000 years.

A mature redwood forest is composed of trees 500-1,000 years old on average. The trees in this redwood grove are approximately 65 years old.



No. The only place in the world that coast redwood trees grow naturally is along the coast of California and southern Oregon.

However, redwoods have been PLANTED all over the world, in many types of climates that are very different from coastal Oregon and California.

Country of Saw the Redwood League

Coast redwoods can grow three to ten feet per year.

Redwoods are among the fastest-growing trees on earth. A redwood achieves most of its vertical growth within the first 100 years of its life. One of the reasons coast redwoods are a highly desired timber species is because they grow so quickly in forests managed for harvest.

Redwood tree lumber is resistant to decay.

Tannins and other natural chemicals in coast redwood make it resistant to many common plant enemies, like insects, fungi and other disease-causing organisms.

This property also slows down the natural decay process of wood and makes coast redwood lumber last longer than material from other tree species.

Most redwood lumber today comes from managed second-growth forests and not the few remaining old-growth forests in California.

No. Although coast redwoods are not native to the campus or the Davis area, they have been planted here.

Redwoods planted in the Central Valley are irrigated to ensure survival. They are one of the most common landscape plants on the UC Davis campus and in the Arboretum. Coast redwoods in the Central Valley can reach heights of 50 feet. You can see natural redwood forests within a two hour drive of here near the coast.

No, but they are in the same plant family (*Taxodiaceae*).

The coast redwood (*Sequoia sempervirens*) is native to the coast of California and southern Oregon and is the tallest tree on earth. The giant sequoia (*Sequoiadendron gigantea*) is native to the Sierra Nevada mountains of California and is the largest living thing on earth. Both trees are considered California's State Tree.

Country of Saw the Redwood League

sprouts

ARE THE COAST REDWOOD'S LIFE INSURANCE

When a redwood tree is injured or killed, sprouts can ensure its survival.

Sprouts are clones, meaning they are genetically identical to the parent tree. A redwood tree's genetic material will survive through its sprouts.

Although redwood trees are disease- and pest-resistant, natural disturbances, like fires and floods, can damage redwood trees.



Ernesto Sandoval

Notice the redwood sprouts in front of you. Coast redwoods are among the few cone-bearing trees with the ability to sprout. This ability likely contributes to the dominance of the redwood tree in California's northern coastal forests.

Sherry Ballard © California
Academy of Sciences

T. Elliot Weier Redwood Grove



WHERE CAN I GO TO SEE AN **old-growth** REDWOOD FOREST?



coast redwood forest

- Old-growth coast redwood forests
- Second-growth and managed redwood forests



Old-growth coast redwood forests are ancient forests that have experienced little disturbance by humans. Today fewer than 5% of the original old-growth forests remain untouched. Redwood trees still grow in most of the original old-growth range, but they primarily grow in forests managed for lumber.

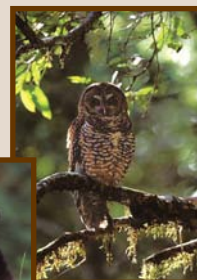
What Are the Ecosystem Benefits of Old-Growth Coast Redwood Forests?

- Tall trees shade forest floor and stream waters, keeping temperatures cool for wildlife
- Coast redwood trees collect water from fog during summer months, which provides extra moisture to the forest during the dry season
- Dead and decaying logs return nutrients to the soil
- Plant roots help stabilize soil and keep soil from washing away during floods
- Layers of vegetation provide habitat for over 200 species of wildlife

Black Bears (*Ursus americanus*) climb up to 100 feet in the redwoods to find food. They eat the cambium layer of wood found right beneath coast redwood bark.



Jeffrey Rich Nature Photography



Northern Spotted Owls (*Strix occidentalis caurina*) prefer cooler temperatures provided by the dense tree cover in undisturbed redwood forests. They nest in abandoned tree cavities created by woodpeckers.

Jeffrey Rich Nature Photography



Banana Slugs (*Ariolimax columbianus*) eat dead plant and animal matter, helping to recycle nutrients in the coast redwood forest.

© 2000 William Leonard



Jeffrey Rich Nature Photography

Chinook Salmon (*Oncorhynchus tshawytscha*) need cool water temperatures and reproduce in pools created by logs that fall in streams.



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T. Elliot Weier Redwood Grove



How Do shallow roots. HELP COAST REDWOODS survive?

Drinking

Shallow roots absorb water that drips off the trees from winter rain and summer fog. In regions without summer fog, redwoods need irrigation.

Breathing

Shallow roots absorb necessary oxygen from the top layers of soil. The top layers of the soil are more oxygen-rich than the deeper layers.

Stabilizing

Extensive shallow roots form a dense mat that helps keep redwoods from falling in storms and floods.

Like those of other trees, redwood's surface roots can be damaged by compaction from foot traffic and machinery.

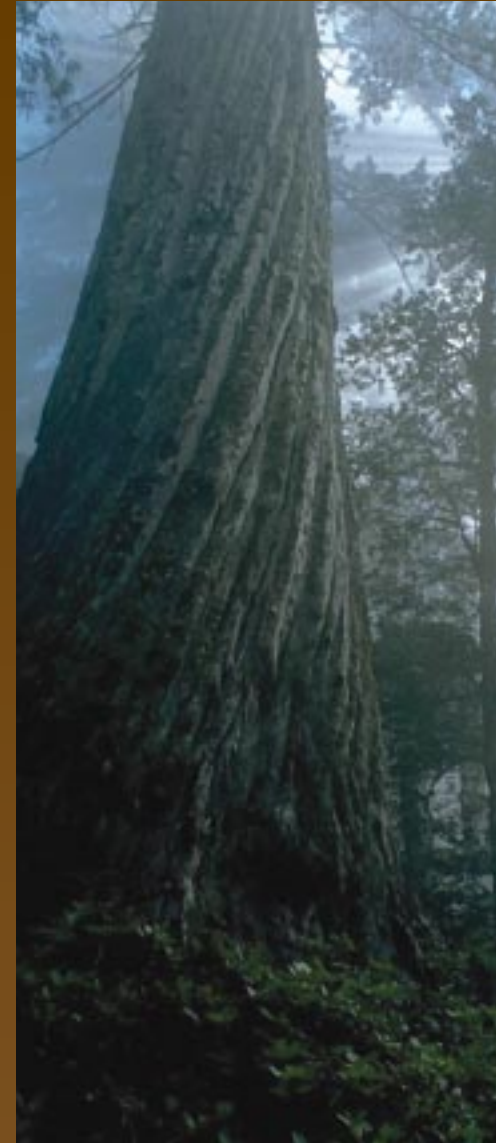
Because there is plentiful surface water available, redwoods don't need deep roots to reach water reserves.

Redwood roots can extend over 50 feet in every direction.

Most redwood roots are located in the top three feet of soil.

Roots of neighboring redwoods often interlock. This network of roots provides added stability.

Floods are common in some redwood ecosystems and can deposit sediments that bury and suffocate roots. Unlike other trees, buried redwood trunks can sprout new roots that quickly grow into the new soil to access oxygen where it is more plentiful.



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T. Elliot Weier Redwood Grove



THIS BENCH IS MADE FROM recycled wood

The decay-resistant qualities of redwood wood make it an extra long-lasting building material. This bench is made from recycled redwood lumber from an old UC Davis bridge.



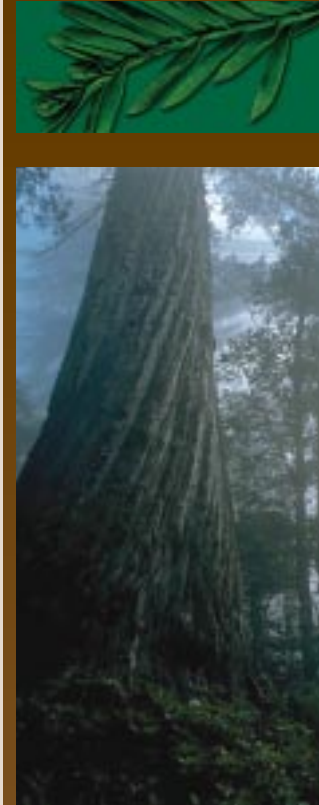
Ellen Zagory

Ernie Head helped build the original tables in the T. Elliot Weier Redwood Grove in 1954. In 2004, Mr. Head (left) and Hal Sconyers, representing the Rotary Club of Davis, worked with Arboretum staff and student employees to construct new benches and tables for the grove using recycled redwood.

T. Elliot Weier Redwood Grove



Robert Potts © California Academy of Sciences



HOW IS REDWOOD BARK like armor?

Redwood bark provides life-saving protection against threats from the environment.

Tough, fibrous bark repels destructive insects.

Tiny air pockets in the spongy bark **insulate** the living, inner part of the tree **against temperature extremes** from fire.



Bark **burns poorly** and **withstands the heat of wildfires** because it contains almost no resins or volatile oils.

Spongy bark up to one foot thick **absorbs shock** from falling branches and trees in the forest.

Touch the bark on the log in front of you and **feel for yourself.**



NOTICE THE sword ferns IN FRONT OF YOU

Sword fern (*Polystichum munitum*) grows in the shade provided by coast redwood trees. The canopy of the mature redwood forest is so dense that little sunlight reaches the forest floor. Understory plants like the sword fern thrive in moist, low-light conditions. They grow up to 1.5 feet tall and 3 feet wide.

Look for sword ferns when you visit natural redwood forests.



Redwoods National Park, Humboldt County, CA

Sword ferns colonize large areas of the forest floor and flourish where other plants cannot.



Sherry Ballard © California Academy of Sciences

T. Elliot Weier Redwood Grove



IF THESE trees could talk...

The trees in the Redwood Grove have been cared for by UC Davis students, faculty and staff for over 60 years. They have grown with the campus and the Arboretum.

1941

Planting

Dr. T. Elliot Weier recruits UC Davis students to plant redwoods along the weedy creek in the newly formed Arboretum. UC Davis has only 1,200 students.



Arboretum Archives

Young redwoods were planted by hand on the banks of Putah Creek in 1941.

1942

Early Struggles

Far from their cool coastal homes, the young redwoods are watered with buckets from Putah Creek to keep them alive through the hot Central Valley summers.

1950

Essential Irrigation

Installation of water lines allows the redwoods to be manually watered with sprinklers. The redwoods are now established in the Central Valley soils and begin to grow taller.

1969

Dedication

The Redwood Grove is dedicated to Dr. T. Elliot Weier, lifelong champion of the Arboretum. UC Davis has grown to 12,000 students.



David Freund

Dr. T. Elliot Weier at the Redwood Grove dedication ceremony in 1969.

1977

Understory Plants

Plants native to the coastal redwood forests are planted under the shady canopy of the tall trees. The Arboretum grove is one of the largest stands of coast redwoods outside their native range.

2000

A Special Gift

UC Davis Senior Class Gift is dedicated to improvement of the Redwood Grove, a popular glen for relaxing and studying on the now urban campus. UC Davis student enrollment exceeds 25,000.

2003

Renovation

New paths, understory plantings, and seating areas create healthier growing conditions for the trees. The Rotary Club of Davis, Friends of the Davis Arboretum, UCD students and other community members help Arboretum staff complete these improvements.



Wayne Tilcock

Community volunteers assist in the renovation of the Redwood Grove.



Daniel Nakahara

The Future

Like thousands of students and community members before you, you can help support the maintenance and development of the Arboretum. Consider honoring a loved one, friend or colleague with an inscription on the seating wall in front of you. Contact the UC Davis Arboretum to learn more about memorial, commemorative and other giving opportunities.

COAST REDWOODS HAVE THEIR OWN drip irrigation



During dry summer months, hanging branches comb the passing coastal fog.



Each waxy leaf gathers the tiny fog droplets into one big drop that is heavy enough to fall to the ground.



The shallow roots absorb the water from this natural "drip" irrigation system that provides needed summer moisture.



Jeff Gnass Photography

Redwoods on the coast comb water from summer fog.

Although there is little to no summer rain in their coastal climate, each redwood can comb up to four inches of water per day from fog! They get 25-50% of their yearly water needs from fog and the remainder comes from winter rain.



Ellen Zagory

Here at UC Davis, we use sprinklers to water the trees during our hot, dry summers.



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T. Elliot Weier Redwood Grove



DISCOVER MY roots!



The root mass in front of you is just a tiny portion of the coast redwood tree's root system.

The orange area represents the relative size of the root mass. Redwood roots from large trees extend laterally from the tree over 50 feet in every direction!

T. Elliot Weier Redwood Grove



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WHY IS THIS tree from China PLANTED IN THE REDWOOD GROVE?

It was planted here because it is a long-lost relative of the coast redwood from a remote region of central China.

The dawn redwood (*Metasequoia glyptostroboides*) was thought to have gone extinct five million years ago but was rediscovered by a Chinese forester in 1941. The tree in front of you was planted in 1990 from seed collected at natural groves of dawn redwood in China.

Close up of dawn redwood needles



Betsy Faber

The dawn redwood can be a great landscape tree.* It is fast-growing, frost-tolerant and pest-free. Unlike the evergreen coast redwood, the dawn redwood loses its leaves in the winter. This allows winter sunlight into the garden.

* Not recommended for growing in areas with high salt or boron content in the water.



Dawn redwood



Betsy Faber

T. Elliot Weier Redwood Grove



IS THIS PLANT A 4-leaf clover?

No, but it sure is lucky.

Here's why: Redwood sorrel (*Oxalis oregana*) has a special ability to thrive in the low-light conditions of the shady redwood forest.



Betsy Faber

Redwood sorrel **OPENS** its leaves to catch diffuse sunlight in the shady redwood forest. Where light levels are low, the sorrel thrives.



Betsy Faber

Redwood sorrel **CLOSES**, or folds, its leaves in intense, direct sunlight. Sorrel cannot survive long periods in direct light and folds its leaves like little umbrellas to avoid it.

**Test Your
Observation Skills:**

Are the redwood sorrel
leaves in front of you
in sun or shade?



T. Elliot Weier Redwood Grove

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