

**FAQ from Armstrong Woods visitors
(and some questions to ask them – in *Italics*)**

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1. How big is the park?

Armstrong Redwoods State Natural Reserve is 805 acres.

It is adjacent to Austin Creek State Recreation Area, which encompasses almost 6000 acres.

2. How long/difficult are the trails?

There are 3 trails in the valley floor. A round trip using the Pioneer, Discovery, and Armstrong Trails is about 1.75 miles of easy walking. It is wheelchair accessible, but the Armstrong Trail (from the Armstrong Tree east towards the picnic area) has a slight hill.

The East Ridge trail is moderate, with a 400' elevation gain in a 2.2 mile round trip.
The Pool Ridge trail is moderate, with a 500' elevation gain in a 2.3 mile round trip. }

Pool ridge is partly closed. See the notes by the Visitor Center.

3. When was the park created?

The Armstrong family wanted to preserve the grove and tried to sell it to the State of California in the early 1900s, but the State didn't want to buy it. They sold it to Sonoma County in 1917, and the State eventually bought it in 1934. It opened to the public as a State Park in 1936. In 1964, it was reclassified as a Natural Reserve, which provides more protection (less development for recreational uses) than a State Park.

(Short answer: It became a State Park in 1934.)

4. When was the fire that charred that bark?

We think that the fire was in 1923.

If the fire was in 1923, what does that tell you about the trees with and without charred bark?

5. Are redwoods immune to fire? to rot? to insects?

Redwoods are **resistant** to fire, rot, and insects, but **not immune**. A chemical called tannin gives the wood and bark its red color and provides that resistance. In addition, the bark of a mature tree can be over a foot thick and is fire resistant both because of the tannins and the air spaces, which don't conduct heat well. They also undergo "natural pruning," which removes lower branches, and can sprout new trees if the root system survives. (See Fire Ecology Walk Brochure and Features, Organism, and Carry Cards on the Stewards website.)

Do you think that a 100 year old tree would have accumulated as much tannin in its wood as a 1000 year old tree? What does that tell you about lumber made from an older tree?

6. How big and old are these trees? (Visitors usually mean tallest in Armstrong Woods, as opposed to tallest in the world) Discuss Armstrong and Parson Jones trees

A couple of the trees were measured in the 1970's. **The Parson Jones Tree** was found to be **310'** tall, and estimated to be about 1300 years old, with a diameter of 13.8'.

The **Armstrong Tree** was found to be 308' tall, about **1400 years** old, and had a diameter of 14.6'.

The tallest coast redwoods are over 380' tall and the oldest are over 2000 years old.

How do you think those numbers have changed since the 1970s? They are definitely a little larger in diameter. They are probably taller, but wind or lightning can break or kill the tops.

How do we tell the age of a tree?

The best way is to count rings, and the best way to do that is to cut the tree down. But obviously we didn't do that to the standing trees. Their age is estimated by comparing their diameter to trees that were cut or fell. Sometimes a tool called an increment corer or increment borer is used to extract a sample of the wood and the rings are measured to determine the growth rate.

7. Is this an old growth forest? Which leads to “What is an old growth forest?” When was the area logged? When did they stop? For what was the wood used?

If/when people ask this, ask them “*What do you mean by ‘old growth forest’?*” This area was logged, but it does have some very old trees. Different people define “old growth” differently. Some use it to describe a stand of trees that is very old (for the species). Others mean a stand that has never been logged.

Generally, an old growth forest is one that:

- is relatively undisturbed by humans
- has a diversity of ages, sizes, and spacing of trees
- has an understory of shade-tolerant species
- has down logs and snags

So...Armstrong Woods has **old growth characteristics**, but it definitely has been disturbed by man. This area was logged in the late 1800s and into the early 1900s. The wood was used to build Santa Rosa and San Francisco, and to rebuild after the 1906 earthquake. In fact, Col Armstrong had a sawmill in Guerneville, and his company cut many trees from this grove. Some people say that the large trees that weren't cut were saved because they had too much rot or fire damage and there were plenty of better quality trees to be logged. See question 3.

8. Are those shamrocks? clover? (referring to redwood sorrel leaves)

That plant is called Redwood Sorrel, or *Oxalis*. It is neither a clover nor a shamrock. It is a relative of a plant called Wood Sorrel which has yellow flowers. You may have seen it growing along roads or even in your yard. The genus name for that group of flowers is *Oxalis*, and it is sometimes called by that name. True Irish Shamrock is a type of clover. There are a couple of species of *Oxalis* that are sometimes called shamrocks, but they aren't the Irish Shamrock. (See the Redwood Sorrel Organism Card, and Shamrock Carry Card on the Stewards website.)

9. Who was Col Armstrong? Parson Jones?

Col. James Armstrong was a Colonel in the Civil War. He came to Calif. from Ohio in 1874 as a land investor. Among other enterprises, he logged and had a sawmill north of Guerneville, (also known as Stumptown). In his later years, he and his family worked to protect some of the redwoods in this area.

Parson Jones was a minister in the Congregational Church. He was a friend and neighbor of Col James Armstrong. In 1901, when he was 73 years old, he married Col Armstrong's daughter Lizzie.

10. What animals live here? Why don't we see many (or any) animals?

Visitors that ask this question are probably thinking of animals such as deer. There are deer in Armstrong Redwoods and Austin Creek, but they prefer the grassy meadows to the dark forest. Ask: ***What would deer be doing here?*** There isn't much grass for them in the forest, but there is grass in grassy areas called prairies that are found elsewhere in the park. But we do occasionally see deer, especially near the creek.

There are also raccoons, foxes, squirrels, mice, many kinds of birds (you may hear a raven), salamanders, rattlesnakes, and invertebrates such as banana slugs, millipedes, scorpions, insects, and spiders.

Most animals are afraid of people, and Armstrong Redwoods is a very busy place most days. So the animals mostly come out at night.

11. Are these the same as the Giant Sequoias?

Short answer: No, they are different species.

These trees are called the **Coast Redwood**. The scientific name is *Sequoia sempervirens*. They live naturally only along a narrow band along the California coast (with a few in southern Oregon). Their natural range seems to be limited by the summer coastal fog. They will, however, grow elsewhere if provided enough water.

The **Giant Sequoia** is the species *Sequoiadendron giganteum*. They grow in a few groves in the Sierra Nevada Mountains, can be over 3000 years old and can have a diameter of nearly 30'. They don't grow quite as tall as the coast redwoods, with the tallest Giant Sequoias being a little over 300' tall. The General Sherman Tree, a Giant Sequoia, is the most massive thing to ever have lived on Earth. (See Organism and Carry Cards on the Stewards website.)

12. Why didn't the fire that made the goosepen kill the tree?

The main living part of a tree is called the cambium, and it is a thin layer of cells just under the bark. It produces the wood on the inside and the bark on the outside. The center of the tree is made up of dead wood cells and is called heartwood. It mainly provides support, like a skeleton. The living wood can also provide support, so if not too much of the cambium and sapwood is burned, the tree can still stand.

However, if the bark is damaged, which it is if a goosepen is formed, insects and disease such as fungus can get into the tree and eventually kill it. But redwoods can usually also grow new wood and eventually heal over the fire scar. ***Look for signs of healing around the edges of a goosepen.*** (See Features, Organism, and Carry Cards on the Stewards website.)

13. Why are so many of the redwoods growing in circles?

Redwoods have the hundreds of buds growing at the base of the tree, which is called the root crown. If the tree is damaged, or even cut or falls, the living roots can still supply water and nutrients to those buds. The buds can sprout into new young trees, which grow in a circle around the stump. As the trees grow, they compete with each other for sunlight, and eventually only one or a very few trees will survive. (See Features, Organism, and Carry Cards on the Stewards website.)

14. If most of the trees started from basal sprouts, are they clones?

Most people call them clones because they are grown from the same original tree. Others would call them the same tree because they are connected by the same root system. If they are considered the same tree as the original tree, then to figure their age, we would add their age to that of the original tree. ***What if the tree from which it sprouted was 1000 years old and sprouted from a previous tree that was 1000 years old and that tree had sprouted from a previous 1000 year old tree? Would the current tree be over 3000 years old?***

15. What effect will climate change have on redwoods?

Much of the global warming is caused by an increase in carbon dioxide from burning fossil fuels. Since plants use CO₂ in photosynthesis, an increase in CO₂ in the atmosphere might be helpful. But temperature and water availability also effect plants, as does fire, of course. Since coast redwoods need summer fog (or at least a source of water in the summer), and climate change seems to be reducing the amount of summer fog, the range of the coast redwoods might be reduced to coastal areas farther north.

Redwoods have an effect on climate change, too. Most of the carbon that they remove from the air by taking in CO₂ is stored in the wood (including branches and roots) until it burns or decomposes. So a tree that lives hundreds or even thousands of years stores or sequesters carbon for that long, keeping it out of the atmosphere.

Even though redwoods are resistant to fire, they can be killed by fires that are hot enough. If climate change results in longer droughts that make the forest drier and kill other plants, redwoods might succumb to fires more readily. For more information – www.savetheredwoods.org

16. What’s the difference between a reserve and a park?

A reserve in the California State Park system has a higher level of protection. Reserves are created primarily to protect features and are less developed than Parks. Parks are created more for human use and recreation, but they do have protection of the features as an important goal.

17. If wood on the ground is a fire hazard, why is there so much dead wood here?

See above...Removing the wood alters the environment, so it requires a lot of red tape to get approval in a reserve such as Armstrong Redwoods. It is also expensive. Planned burns can do the job, but burning near a town such as Guerneville has to be done with great care. State Parks is rethinking their forest management practices, and in the future we will see more safe prescribed burning used to reduce fuel loads and provide for a healthier, more natural forest ecosystem. There is a lot to be learned from indigenous people about the value of fire as a forest management tool.

(See #2 under the Walbridge Fire questions below.)

State Parks is looking at having a contractor work on reducing the fuel load on the valley floor at ARSNR.

18. Why aren’t dogs allowed on the trail? Why can’t I leave the dog poop where it is?

The trails are narrow, and dogs on leashes can pose problems to people trying to pass each other, especially if both have dogs on leashes. The main reason, though, is for protection of wildlife. Not everyone will keep their dog on a leash. (Go to Doran beach some time and see how many people let their dogs off leash!). Even a well-behaved dog may take off after a deer or other wildlife. Dogs are carnivores, and even dogs on leashes leave their scent, which affects the behavior of prey species. And feces may bring diseases or parasites into the park. Not everybody cleans up after their pet.

Dogs are allowed on leash on the paved roads where there is less wildlife and cleanup is easier.

19. How much lumber can you get from one tree?

That depends, of course, on the size of the tree and how efficiently it is milled into lumber. In the early days of logging the redwoods, as much as a third of the wood was often left in the forest!

It is estimated that the Parson Jones tree would produce about 25,000 board feet of lumber, most of it “clear” (free of knots). That’s enough to build about 3.5 1100 square foot houses. In 2019, that wood would have sold for about \$110,000. In 2021 it would have sold for about \$275,000!

Walbridge Fire Questions:

1. When was the fire, and what started it?

The Walbridge fire was started by “dry” lightning outside of Austin Creek State Recreation area and burned in August and September of 2020.

(See Fire Ecology Walk Brochure and Carry Cards on the Stewards website.)

2. I heard that fire is good for the redwoods. How so?

Many kinds of plants in California are adapted to survive fire, and coast redwoods are especially well adapted. Fire removes some of the other plants that compete with redwoods for light and water. More importantly, frequent small fires don't burn as hot as fires that have a hundred years or more of accumulated dead branches and other fuel, so frequent fires aren't as likely to get big or hot enough to kill mature redwoods.

3. How many acres were burned?

The LNU Fire complex, of which the Walbridge Fire was part, burned over 50,000 acres, or about 80 square miles. 4729 acres were in State Parks. 511 acres (68%) of Armstrong Redwoods State Natural Reserve was burned, mostly on the hillsides and ridges. 3801 acres (64%) of Austin Creek Recreation Area burned.

4. How did the fire affect Austin Creek State Recreation Area and Bullfrog Pond Campground?

The fire burned hot and fast in Austin Creek SRA, so when it reached Bullfrog Pond Campground it caused a considerable amount of destruction. Outbuildings at one State Park residence were all burned and another residence was completely lost. In the campground, the water system was destroyed, a restroom was burned, as were some picnic tables, food lockers and signage. Fire fighters and State Park staff worked very hard to save what they could.

Was Pond Farm Pottery affected by the fire?

Pond Farm survived, thanks to the dedicated efforts of State Park staff and firefighters. Currently, there is electricity at Pond Farm but no water service. The Artist-in-Residence program was postponed until Spring 2022. Docent-tours of Pond Farm have resumed.

5. How did the fire affect Armstrong Redwoods State Natural Reserve?

By the time the fire got into Armstrong Redwoods SNR, it burned low and slow, providing for a healthy fire in the Reserve. Visitors will see evidence of the fire in the area near the Colonel Armstrong Tree and along the Armstrong Trail, near the picnic area and along the road. The hillside to the east of the road between the picnic area and the entrance was intentionally burned as a backfire to keep the wildfire from entering the Grove.

6. How many redwoods were killed?

The fire itself probably didn't kill any mature redwoods, but some redwoods were cut because they posed a hazard to visitors. At the direction of the CA Office of Emergency Services, thousands of dead or hazardous trees, were removed by a contractor. The majority of the trees removed were Douglas Fir, followed by Bay Laurel, Madone. Eucalyptus, and tanoak. 50% of the trees were less than 11 inches in diameter and 90%

were less than 18 inches in diameter. A very small percentage of the trees were redwoods and only one of them was over 50 inches in diameter. State Parks is monitoring trees that may be in danger of falling.

7. Why did it take so long for the park to reopen after the fire?

Public safety was the main concern. Fires can smolder in the root system for months after the above ground fire is extinguished. There were many dead and injured trees, some standing and some fallen across the trails, and others threatening to fall. The trails needed to be repaired and hazard trees and limbs removed. In the early months after the fire, there were hundreds of logs brought down from Austin Creek SRA and stacked in the picnic area of Armstrong Redwoods. It took months for State Parks and Stewards' staff and volunteers to process the log deck into firewood that was then moved to a staging area in Austin Creek SRA. It will be sold in coastal campgrounds.

8. Why aren't the trails open yet? Austin Creek SRA and Bullfrog Pond Campground?

The East Ridge Trail has reopened. The Waterfall Trail from the East Ridge Trail down to the Volunteer Office parking log has not reopened. Neither the trail nor the bridge have been repaired. The East Ridge Trail now continues along the ridge and drops down to McMahan Road, returning to the valley floor via Armstrong Woods Road. As of April, 2023, the lower loop of the Pool Ridge Trail is also open, but not the whole trail.

The road going up into Austin Creek SRA is in bad shape and needs to be repaired by the County. In some areas it is difficult for cars that are not 4-wheel drive to navigate. The water system and restrooms at Bullfrog Pond were destroyed. State Parks and Stewards are working to open the campground as soon as possible.

For the latest information on trail closures, see signs at the Visitor Center, or ask at the Kiosk or Welcome Center.

9. Did the fires affect Stewards?

Absolutely! Stewards has three main functions:

1. We do maintenance in both Armstrong Redwoods and Austin Creek.
2. We manage visitor services such as reservations and visitor centers.
3. We provide education for visitors of all ages. Normally, our school group program serves over 5,000 students a year with reservation services and about half receive docent-led programs.

After the fire, we couldn't provide education for over a year, and we had to work with State Parks to do a lot of trail restoration and restore other park resources.

A major impact of the fires on Stewards was loss of revenue from a percentage of day-use and camping fees and sales in our visitor center. There are a few paid Stewards staff, and many volunteers like me. Stewards staff are not paid by the State. They are paid from funds raised by Stewards. All the work Stewards does is paid for from grants, entrance fees, sales at the visitor center, fees for tours, fund raising events such as online auctions, and donations. Some of those sources of income were eliminated for over a year because of the fire.