

TRAIL MAP

THE REDWOOD TRAIL

Big Basin State Park

Impacts of the 2020 CZU Fire

The 2020 fire in Big Basin was not like historic fires occurring in old-growth coast redwood forests. It was the first climate change megafire to burn an old-growth coast redwood forest. As such it was exceptionally severe. A prolonged drought set the table for this fire. High winds then caused the fire to explode and do unprecedented damage. This trail guide tells the story of an old-growth redwood forest that has been severely altered by fire.

The coast redwood trees themselves have an amazing ability to survive fire once they reach the age where their trunks exceed only a few inches in diameter. They can lose all their branches and needles and still survive. They do so by sprouting new stems from their bases and new branches from their trunks, as you will see as you walk along this trail. However, the total loss of their canopies leads to the loss of many associated plants and animals.



This is a loop trail about $\frac{3}{4}$ mile long. Start the trail in the parking lot. At the first trail junction continue straight ahead. At the next trail junction, you will turn left and continue to walk the trail in a counterclockwise direction. There are currently no markers at individual stations, so use the map and thumbnail pictures to

locate them. It's not that hard to find the stops with the directions we've given here.

Stop A is located on the left side of the trail just before you make the left turn.



A- This is the first of several new sunny openings in this once very shady place. Because sunlight now lights up the forest floor, many shade-loving plants, such as sword fern, are now missing. New plants have appeared, both weeds and native plants alike. We currently have populations of native willow along with weedy bull thistle and horse weed which are difficult to control. They will likely persist for many years until the forest canopy grows back and shades them out. State Parks is actively managing other weeds in the burn area focusing on french broom.

Proceed along the trail a fairly long way until you see a sign on the right with a

drawing of a bluish tent cabin on it. Take a few steps further until the stream is visible on the right. This is Stop B.



B- Look at the stream on the right side of the trail and the fallen log that straddles it. At each side of the log are red alder saplings. The original alders here were killed by the fire, but they have regrown from seed. They grow quickly to restore the shade which cools the water and their roots help to prevent bank erosion. Alder leaves are nitrogen rich, and when dropped or rinsed into the stream, they feed the insects that support rainbow trout, red-legged

frogs, and streamside birds, like warblers and flycatchers.

Walk on about 100 feet and look across the creek and far back for a tall dead tree with a light-colored trunk and no sprouts on it. This is Stop C.



C- This fire-killed tree is a Douglas-fir. Old-growth Douglas-firs are resistant to most fires because they have a thick insulating bark not found in younger trees. However, the 2020 fire, being intensified by climate change, was not a “normal” fire to which they were adapted, and nearly all of them in Big Basin were killed by the fire. Unlike

redwoods, they cannot sprout new stems or branches.

Continue walking until the trail makes a sharp turn to the left. This is Stop D.



D- To the right of the trail and between the trail and the creek is a row of three middle-aged Douglas-firs – one alive, one dead, and one dying. The last two lost their tops in the fire. Old-growth Douglas-firs were very important in the pre-fire ecosystem. They were favored trees for nesting by the endangered marbled murrelet and they acquired large branches and other old-

growth characteristics twice as fast as redwoods. Douglas-fir seeds are an important food source for squirrels, chipmunks, mice, and many birds including chickadees and kinglets, but that food source is now gone. Below is a zoomed in view of the tops of the three trees.



Continue on the trail until you see a small wooden bench on the right This is Stop E.



E- On the left is a large redwood with many burls growing around its base. It is called

the Animal Tree because the burls resemble animal heads. Growing in front of it and difficult to see well is a sun-loving native shrub called blue-blossom ceanothus. This is a sub-par specimen but the location was easy to describe. Better specimens can be found further down the trail if you look for a tall shrub with glossy green leaves having three prominent parallel veins like this:



Ceanothus was absent from this forest before the fire. But the seed was there in the soil where it can remain viable for several hundred years waiting for another fire to occur. It has now germinated and formed dense thickets 8 – 12 feet high in the burn area completely displacing the ferns and flowers typically found in a redwood forest. These thickets may persist for up to 20 years. On a positive note, Ceanothus adds nitrogen to the soil and prevents soil erosion on steep slopes. Its leaves are readily browsed by deer and its abundant seeds are eaten by many birds.

Continue following the trail until you see a numeral “5” attached to the rope. This marks the location of the former Chimney Tree, whose “chimney” was destroyed in the 2020 fire. Walk on about 25 feet until you see a 2-foot-tall redwood seedling on the left. This is Stop F.



F- This redwood seedling grew from seed that germinated after the fire. The seed needs bare soil to grow in and is dependent on disturbances, like fire, to provide it. However most redwood reproduction

occurs by basal sprouts and not by seed. It will take more than a decade for this young tree to make cones and produce seeds of its own. In severely burned areas, Douglas-firs have been eliminated, there is no longer any seed source to replace them, and they can't reproduce by sprouting.

The next stop is about 200 feet further along the trail. Look for a low cut stump on the left. This is Stop G.



G- Look about 20 feet back from the left edge of the trail and beyond the cut stump to see a small tree growing in front of a blackened redwood trunk. This is a knobcone pine – a plant normally found in chaparral. It is out of place here but may be

a sign of things to come. Vegetation associated with redwoods in the Santa Cruz Mountains will likely change over the next few decades due to climate change making the summers hotter and drier. The mature redwood trees, being so long-lived, will likely survive the change, but banana slugs, frogs, and some salamanders may not.

Telephoto view of knobcone pine:



Walk on about 400 feet to where the trail makes a short jog to the right and then immediately back to the left. At the end of the jog is Stop H.



H- This burned-out jagged stump next to the trail is known as a redwood shell tree. Unlike most trees that burn from the outside inwards, mature and older redwoods burn from the inside out. This happens because the bark is fire resistant, but the wood inside will burn due to the intensified heat of the “oven-like” environment inside the trunk. If a fire gets inside a tree, it will burn upwards or smolder for a long time. Eventually the entire inside of the tree will burn away leaving a hollow tree, also known as a chimney tree. These trees are unstable and often will collapse, making chimney trees very uncommon.

Take a few steps more and you are at Stop I, which is a viewpoint of two tall old-growth redwoods.



I- Look straight ahead to see the Father Tree. It is the tall tree on the right and the biggest tree in the park with a diameter of over 17 feet. It lost all its branches in the fire including those used by nesting marbled murrelets — an endangered seabird that nests in old-growth trees. Before the fire this tree had a 24-inch diameter horizontal branch that was 135 feet above the ground and supported a murrelet nest for several years. That branch, and others like it, have burned away and it may take up to 100 years for suitable replacement branches to form.

Stop J is easily visible from here, just a few steps more along the trail.



J- The small stone monument with a plaque missing from the top was a memorial to Andrew P. Hill. He fought to save the redwoods from logging and started the movement to save Big Basin, but that fight still continues. A new, more insidious threat, human-caused climate change, is creating megafires that do great damage to the redwood forest community. Andrew Hill lobbied businessmen, government officials, and politicians to set aside Big Basin as a park. We need to lobby these same people today to step up efforts to fight climate change. The severe damage seen along this trail would not have happened were it not for climate change. We need to act now to save our other old-growth redwood forests before it is too late.

Portrait of Andrew P. Hill:



Walk ahead on the trail which circles the base of the Father Tree and you will soon come to a short spur trail on the right leading to the Mother Tree and Stop K.



K- Take the short spur trail to the Mother Tree. It is 262 feet tall and its base has been hollowed out by successive fires over the centuries to form a large cavity called a

“goose pen”. In 2020, the fire burned so tenaciously inside this tree that fire-fighters had to pour 50,000 gallons of water on it to put it out.

Before the fire the height of the Mother was 293 feet. After the fire its height is now 262 feet high. It is not unusual for redwoods to have their tops break off in a severe fire. Currently the tallest tree in the park, found elsewhere is 331 feet tall. We are pleased to report that it only lost 4 inches of its height in the 2020 fire.

Here is a telephoto picture of the broken top of the Mother Tree.



Go back to the main trail and turn right. In just few feet, and crowding the trail on the left, is a bushy sprouting tan oak tree. This is Stop L.



L- This shrub-like growth surrounding a dead tree trunk is a tan oak sprout. Like redwoods, tan oaks will sprout new shoots from the base even though the top was killed by fire. Many other trees and shrubs in California have this adaptation. This means that in spite of above-ground damage, the individual plant can survive and continue to grow for centuries. However, it will be many years before the new tree will produce significant shade and acorns, an important wildlife food item. In the meantime, animal numbers will be suppressed. Animals relying heavily on acorns include squirrels, chipmunks, jays, band-tailed pigeons, and acorn woodpeckers.

Walk straight ahead to return to the beginning of the loop. Thank you for taking this journey with us.



This trail guide was prepared by the biologists and natural resource management experts of the Santa Cruz Mountains Bioregional Council with the cooperation of California State Parks. Much more information about the 2020 CZU fire and redwood ecology in general is available on our website at www.scmhc.org.

Additional copies of this trail guide to the Redwood Trail in Big Basin State Park can be downloaded from our website, www.scmhc.org.