



Robert Louis Stevenson State Park



Robert Louis Stevenson State Park is situated along the crest of the Mayacama Mountains, within the northern California Coast Ranges geomorphic province. The park is on the slopes of Mount St. Helena, a majestic double-peaked mountain that rises above the Napa Valley to an elevation of 4,339 feet.

Sonoma Volcanics

The Sonoma Volcanics include a wide spectrum of volcanic rock types, from silica-rich rhyolite, to dacite, andesite and basalt. The rocks all began as molten material (magma) in a chamber deep beneath the earth's surface. Accumulation of gas and high pressures in the magma chamber forced magma to the surface as lava flows, or blasted out in an aerosol of molten material. Molten material cast skyward in violent eruptions quickly solidifies to form ash and larger globular masses known as volcanic bombs. After this material falls to earth, it may be transported by gravity or water, mixed with other volcanic debris, and then eventually accumulate and harden to form pyroclastic rocks.

Features:

Volcanic geomorphology and remnant silver ore

What you can see:

On the southeastern flank of the mountain is the historic Silverado silver mine and the remains of the mining camp that flourished briefly during the 1870s. Southward from the peak along the range crest are Table Rock and the Palisades—a stunning wall of craggy volcanic cliffs that extends for more than a mile along the ridge that overlooks the town of Calistoga.

Like Mount St. Helena, the Palisades is composed of pyroclastic rocks. The principal cliff-forming deposits consist of a thick andesitic agglomerate layer over rhyolitic ash-flow tuffs. Below the cliffs are outcrops of mega-breccia, composed of great blocks of jumbled volcanic rock.



Pyroclastic rocks in the park include tuff—composed of fine volcanic ash; welded tuff—formed when some ash fragments, still slightly hot and plastic, were combined and compressed; agglomerate—composed of a mix of ash, volcanic bombs, and other fragments; and volcanic breccia—composed of mixed sizes of angular rock fragments, in a matrix of finer pyroclastic material.

Mount St. Helena—Not a Volcano, But a Resurgent Caldera!

Mount St. Helena could be mistaken for a volcano, but any resemblance to an actual volcanic edifice is coincidental. The mountain is composed of more than 4,000 feet of interlayered tuff, volcanic breccia and, towards the summit, welded rhyolitic tuff. This massive stack of material is thought to have accumulated within a caldera collapse structure. A caldera is a large depression that forms when a volcano collapses into the cavity once occupied by erupted magma. After collapse of the Mount St. Helena caldera, intrusion and movement of additional magma below the caldera is interpreted to have resulted in resurgent eruptions and uplift of the central collapsed area. This resurgent uplift, combined with more recent tectonic uplift, block faulting, and progressive erosion, produced the topographic high we see today.



Why it's important: Unlike most of the northern California Coast Ranges, the Mayacama Mountains are largely volcanic in origin. The rocks that form Mount St. Helena and the Palisades are part of a group of rocks known as the Sonoma Volcanics. The Sonoma Volcanics erupted from a number of different volcanic centers in the Napa-Sonoma region between 2.6 and 8 million years ago. In addition to providing dramatic scenery, the rich soils developed from the volcanic rocks support and nourish the region's agricultural crown jewels—premium quality wine grapes.

The last episodes of volcanism led to the formation of silver and gold deposits. These precious ore veins attracted an early flood of fortune-seekers to the region.

Silver Mining

After the miners made quick work of the easy pickings and moved on, a derelict bunkhouse at the Silverado mine served for several months in 1880 as the honeymoon suite for the now-famous (but then broke) writer Robert Louis Stevenson and his new wife, Fanny Vandegrift Osbourne. Stevenson's book, *The Silverado Squatters*, described their stay at the camp.



The historic Silverado mine site is one of several precious metal mines in the Calistoga mining district. The mine extracted silver and some gold from thick veins of milky quartz and zones of mineralization along the margins of the volcanic chamber. The mineralization developed when the hydrothermal (hot-spring) fluids migrated through fractures in the volcanic and older wall rocks. Ore fluids are thought to have been heated by magma introduced during the late resurgent phase of volcanic activity beneath the Mount St. Helena caldera. The Silverado mine opened in 1872, and for a brief period drew upward of 1,500 people to a bustling mining camp that included several saloons and a hotel. Two main tunnels were constructed into the mountain, with a connecting vertical shaft located farther up the mountain. The miners followed the ore veins to a depth of almost 600 feet, and curtailed the mining pursuits since the cost to extract the ore exceeded the value of the target precious metals. When Robert Louis Stevenson came to the area in 1880, the mine had already been abandoned.

Final Thoughts

Often feared, volcanic eruptions deliver from the depths essential minerals on which society depends.

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