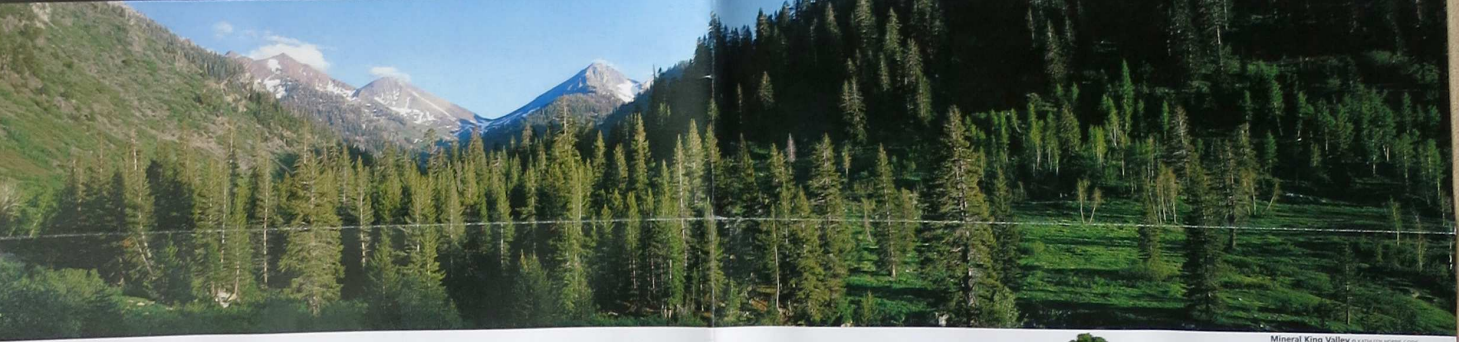


Sequoia and Kings Canyon

Sequoia and Kings Canyon
National Parks
California

National Park Service
U.S. Department of the Interior



From atop Moro Rock you can grasp the many superlatives that brought Sequoia—and eventually Kings Canyon—into the National Park System so early that Sequoia is now our second-oldest national park. To the north lies the Giant Forest where sequoias rise above their neighbors. In this cathedral-like grove stands the

275-foot-tall General Sherman Tree. Its trunk weighs an estimated 1,385 tons and its circumference at the ground is nearly 103 feet. To the west are the dry but diverse foothills with their oak trees and chaparral brush descending toward the San Joaquin Valley. To the south, and down over 5,000 vertical feet, the Middle

Fork of the Kaweah River threads its rugged canyon. To the east, snowcapped peaks up to 13,802 feet tall are visible. Just out of sight the highest mountain in the contiguous 48 states, Mount Whitney, reaches 14,500 feet. Big trees, high peaks, deep canyons, and extensive wilderness, all in North America's long-

est single continuous mountain range; these superlatives abound amidst glorious scenery. Pioneering conservationist John Muir explored and named the Giant Forest. "When I entered this sublime wilderness the day was nearly done," he observed, "the trees with rosy, glowing countenances seemed to be hushed and

thoughtful, as if waiting in conscious religious dependence on the sun, and one naturally walked softly and awestruck among them." May you follow in Muir's footsteps.

Earth's Largest Tree

In volume of total wood the giant sequoia is Earth's largest living tree. Its nearly conical trunk—which remains thick high into the branches—shows why. At least one tree species lives longer; one has a greater diameter, three grow taller, but none is larger. In all the world, sequoias grow naturally only on the west slope of the Sierra Nevada, usually between 5,000 and 7,000 feet of elevation. There are some 75 groves in all. The General Sherman Tree is estimated to be 2,200 years old. Its largest branch is almost seven feet in diameter. Every year the General Sherman grows enough new wood to produce a 60-foot-tall tree of usual size.



"Most of the Sierra trees die of disease, fungi, etc.," John Muir wrote, "but nothing hurts the Big Tree. Barring accidents, it seems to be immortal." Muir was partly right. Chemicals in the wood bark provide resistance to insects (fungi), and thick bark insulates them from most fire. The main cause of sequoia deaths is toppling. They have a shallow root system with no taproot. Soil moisture, root damage, and strong winds can lead to toppling.

Sequoia, America's Second Oldest National Park San Joaquin Valley residents and others urged Congress to protect Sierra tracts from logging in the 1880s. Some park proponents sought to protect water supplies for irrigation; others, the Big Trees. Preserving land for scenic and recreational values was an infant idea then.

Sequoia National Park was created on September 25, 1890. Congress tripled its size a week later and created General Grant National Park to protect Grant Grove. A Sierra Forest Reserve protected more lands in 1893, and in 1926 Kern Canyon was added to Sequoia. In 1940 General Grant merged with the new Kings Canyon National Park. In 1978 Mineral King was added to Sequoia. Since 1943 Sequoia and Kings Canyon have been managed jointly.

John Muir Conservantist John Muir's response to logging the giant sequoias was: "As well sell the rain clouds and the snow and the rivers to be cut up and carried away, if that were possible." Muir explored and named the Giant Forest, site of four of the world's five largest trees. He pioneered Mount Whitney's steep east face. And he proved the geological role of Sierran glaciers, a new theory then that was disputed by the California state geologist, Josiah D. Whitney.

Sequoia and Redwood Compared

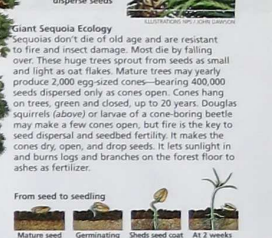
The giant sequoia has a massive trunk, huge stout branches, and cinnamon-colored bark. Also called "Sierra redwood" and "Big Tree," its scientific name is *Sequoiadendron giganteum*. The taller and more slender coast redwood, *Sequoia sempervirens*, is more conifer-like in profile.



Sequoia grows naturally only on the west slope of California's Sierra Nevada range. Redwoods grow naturally only in a narrow strip along the Pacific Coast.



Sequoias don't die of old age and are resistant to fire and insect damage. Most die by falling over. These huge trees sprout from seeds as small and light as oat flakes. Mature trees may yearly produce 2,000 egg-sized cones—bearing 400,000 seeds dispersed only as cones open. Cones hang on trees, green and closed, up to 20 years. Douglas squirrels (above) or larvae of a cone-boring beetle may make a few cones open, but fire is the key to seeds dispersal and seedbed fertility. It makes the cones dry, open, and drop seeds. It lets sunlight in and burns logs and branches on the forest floor to ashes as fertilizer.



Deep Canyons and High Peaks

These parks encompass the most rugged portions of the Sierra Nevada. From the highest peaks in the lower 48 states, ice age glaciers descended to carve some of the country's deepest canyons. In their upper reaches, these gorges show the U-shaped profile characteristic of glacial gouging. At lower elevations they resume the V shape of water-carved canyons. In Sequoia the Generals Highway climbs the stream-cut walls of the Kaweah canyon. Kings Canyon Scenic Byway passes through both geographic profiles; where it ends, you can stand on canyon floor scooped flat by glaciers and stare up at canyon walls rising through clouds and snow.



The Snowy, Sawtooth Mountain Range Over 400 miles long and 60 to 80 miles wide, the Sierra Nevada is larger than the entire Alps area—French, Swiss, and Italian combined. Palisade Crest in Kings Canyon National Park and the Mount Whitney group in Sequoia each boast six peaks over 14,000 feet of elevation.

No roads cross the range here; intimate appreciation of the mountains' scale and grandeur is hard-won afoot or with packstock. Panoramic vistas are seen from Moro Rock, at roadside pullouts along the Generals Highway, at Panoramic Point near Grant Grove, and at roadside pullouts before Kings Canyon Scenic Byway descends into the canyon. The Mineral King valley provides superlative hiking access to meadows, alpine lakes, and Sierra peaks.

Park roads top out at 7,800 feet of elevation, so most can't see the parks do not experience the alpine country. Above 9,000 feet tall trees or dense forests cannot survive the harsh climate. Above about 11,000 feet, no trees grow. Here are mostly boulders, rocks, and gravel punctuated with small alpine lakes, meadows, and low-growing shrubs. Summer flourishes but briefly. Preparing for winter, the marmot stores body fat; the pika stores small piles of hay. Mountain lakes dot Sierran wilderness, many set in cirques, bowl-shaped niches carved into rock by glaciers.



The General Sherman Tree, the world's largest living tree, is in Grant Grove, Sequoia National Park. The General Grant, the Nation's Christmas Tree and a national shrine, is in Grant Grove, Kings Canyon National Park.

The tallest trees in the world grow within a mile of one another on Redwood Creek along California's northern coast in Redwood National Park.

Sierran Wildlife Mule deer are prime prey of elusive mountain lions. Pine martens, fishers, and weasels pursue squirrels and other small animals. Black bears may take fawns or eat caribou but mostly eat vegetation. Marmots and pikas live in mountains. Coyotes, gray foxes, bobcats, and ringtails patrol the forests.



Visiting the Parks

Getting Here Vehicle access is by CA 180 into Kings Canyon or CA 198 into Sequoia. The Generals Highway connects both, making loop trips possible. Vehicles longer than 22 feet are not advised between Fortieth and Giant Forest Museum in Sequoia Park. CA 180 has fewer curves. There is no road access from US 395 east of the parks. Air, bus, Amtrak, and rental cars are available in Fresno and Visalia. Visalia offers a park shuttle in summer. Gasoline is not available within the parks.

Activities Check bulletin boards for schedules of ranger-led walks and talks. **Crystal Cave** This cool, beautiful cavern is open in summer only. Buy tickets for tours only at Lodgepole and Foothills visitor centers—not at the cave. **Food and Lodging** For reservations in Kings Canyon year-round, call 559-335-5500. Wukachi Lodge is open year-round in Sequoia; call 888-252-5157. Grant Grove and Wukachi offer food service year-round. Cedar Grove and Lodgepole in summer. Nearby towns offer food and lodging.

Camping Campground locations range from the warm foothills to cool forest settings; some are open all year. For summer you can reserve standard sites at Lodgepole and Dorst Creek only, and large-group sites in other areas. Call 888-252-5157 or visit www.recreation.gov. Lodgepole, Grant Grove, and Atwell Mill campgrounds are close to sequoias.

Protect the Past Archeological sites and artifacts and all park features are protected by law. If you find artifacts or see evidence of collecting, please notify the park.

Wilderness Permits (fee charged in summer) are required for all overnight wilderness trips. Permits can be reserved. Fax or mail requests no earlier than March 1 and no later than two weeks before the start of your trip. Some first-come, first-served permits are available after 1 pm on the day before departure. Be prepared to be fully self-reliant. Ask for specific regulations on use of horses, burros, and llamas. For information call 559-365-3766.

Lightning Danger When a thunderstorm threatens, get in a vehicle or large building. Don't stand under a lone tree. Avoid open areas and water and high places like Moro Rock. If your hair stands on end, drop to your knees and bend forward with your hands on your knees. Do not lie flat on the ground.

More Information A free newspaper describes the parks and their facilities. Call 559-565-3341 for 24-hour recordings on road and weather conditions (updated daily), camping, lodging, and activities, or to reach a ranger. Or contact: Sequoia and Kings Canyon National Parks 47050 Generals Highway Three Rivers, CA 92371-9700 www.nps.gov/skq

Profile of the Sierra Phenomenal changes in topographic relief that characterize these parks are illustrated in this geological cross section below. It shows the Sierra Nevada from the North Fork of the Kaweah River, 34 miles east through the Giant Forest to Mount Whitney, the park's highest point. Labels on the illustration identify the park's giant sequoia groves.

Foothills Chaparral Dry, hot summers in the Sierra's western foothills give rise to chaparral, a drought-resistant shrub community adapted to periodic fire. Winter rains bring wild-flower bursts in spring before grasslands and chaparral go brown for summer and fall.

Natural Hazards Expect the unexpected: falling trees, slippery surfaces, rolling rocks, cliffs, fast rivers, biting insects, and wild animals. You are responsible for your own safety. Seek first aid at visitor centers. In an emergency call 911 from any park phone; no coins needed.

Park roads are steep, narrow, and winding. Downshift even in automatic to prevent a burned-out transmission going uphill and burned-out brakes downhill. Pull into a safe turnout to look at scenery. Slow-moving vehicles must pull over to let others pass. Seatbelts are required by law. Motorcyclists: watch for oil buildup on roads.

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The Giant Sequoia Belt The world's 75 giant sequoia groves grow on moist, unglaciated ridges on the Sierra's west slope, between 5,000 and 7,000 feet of elevation. Only eight groves lie north of Kings River—scattered over nearly 200 miles. The rest occur south of the river at intervals of 4.5 miles or less in a 60-mile-long belt. This Big Tree range has shrunk to this area by about 2.5 million years ago when climates became drier. Some 60 million years ago its ancestral species ranged more widely. Visually dominant in their groves, sequoias are part of the mixed conifer forest that includes white fir, sugar pine, yellow pine, and incense-cedar. The largest remaining sequoia groves are at Redwood Mountain in Kings Canyon National Park and at Giant Forest in Sequoia National Park. Redwood Mountain grove covers 3,100 acres and has 15,800 sequoia trees over

one foot in diameter at their bases. The Giant Forest covers 1,800 acres with 8,400 such trees. Some 36,500 acres of sequoia groves remain in the Sierra. Most are under federal or state protection.

Elevation and Precipitation The Sierra Nevada forces moist, eastbound air upwards. As it rises the air is cooled and forced to release its moisture as precipitation. Drought-resistant chaparral covers lower

mixed-wood elevations. Gargantuan sequoia-mixed-conifer forests cover middle elevations. Air masses crest the mountains mostly depleted of moisture. East of the Sierra Nevada, in its rainshadow,

lies the semi-arid Great Basin. On the Sierra's west slope precipitation generally increases until it reaches a maximum between 5,000 and 8,000 feet of elevation. This zone of maximum precipitation includes the sequoia belt and its laurel forest development. Above these elevations precipitation tends to decrease.



More Rock Moro Rock is a dome-shaped granite monolith. In the Sierra Nevada, these domes are part of the mixed conifer forest that includes white fir, sugar pine, yellow pine, and incense-cedar. The largest remaining sequoia groves are at Redwood Mountain in Kings Canyon National Park and at Giant Forest in Sequoia National Park. Redwood Mountain grove covers 3,100 acres and has 15,800 sequoia trees over one foot in diameter at their bases.

Evolution Expansion of the mountain range when the subduction that once capped the Sierra had eroded. The source of compression is removed, and granite slowly expands. Fractures that form during exfoliation tend to set corners. Most are under federal or state protection.

In rounded, dome-like forms Moro Rock's summit (elevation 6,225 feet), a strenuous hike, is a rounded, dome-like form. Moro Rock is a 0.25-mile trail climb, 300 vertical feet between

Mount Whitney Mount Whitney crowns the Sierra Nevada—the highest point in the contiguous United States. Named for California state geologist Josiah Dwight Whitney in 1854, it is visible from the west only from remote backcountry. Visitors to the Owens Valley area of the park see it from US 395 near Lone Pine.