

The Mountain Reawakens

In May of 1914 Lassen Peak burst into eruption, beginning a seven-year cycle of sporadic volcanic outbursts. The climax of this extended episode took place in 1915, when the peak blew an enormous mushroom cloud some 11 kilometers (7 miles) skyward into the stratosphere. The reawakening of this volcano, which began as a vent on a larger extinct volcano known as Tehama, profoundly altered the surrounding landscape. The area was made a national park in 1916 because of its significance as an active volcanic landscape, other portions of which saw eruptions in 1851. The park is a compact laboratory of volcanic phenomena and most associated thermal features except true geysers. It is part of a vast geographic unit—a great lava plateau with isolated volcanic peaks—that also encompasses Lava Beds National Monument, California, and Crater

Lake National Park, Oregon. Before the 1980 eruption of Mount Saint Helens in Washington, Lassen Peak was the most recent volcanic outburst in the contiguous 48 states. The peak is the southernmost volcano in the Cascade Range, which extends from here into Canada. The western part of the park features great lava pinnacles, huge mountains created by lava flows, jagged craters, and steaming sulphur vents. It is cut by spectacular glaciated canyons and is dotted and threaded by lakes and rushing clear streams. Snowbanks persist year round and beautiful meadows are spread with wildflowers in spring. The eastern part of the park is a vast lava plateau more than 1.5 kilometers (1 mile) above sea level. Here are found small cinder cones—Fairfield Peak, Hat Mountain, and Crater Butte. Forested with pine and fir, this area is studded with small lakes, but it

boasts few streams. Warner Valley (see map), marking the southern edge of the Lassen plateau, features hot spring areas—Boiling Springs Lake, Devils Kitchen, and Terminal Geyser. This forested, steep valley also has gorgeous large meadows.

The 1980 eruption of Mount Saint Helens reduces Lassen's superlative status, but it increased the park's significance as a 65-year laboratory of possible recovery patterns for Mount Saint Helens. The Devastated Area (see map) evidences the combined mud flow and gas blast destruction typical of many volcanic eruptions in the Cascades. The Chaos Jumbles area looks similarly destroyed, but for a different reason. An air-cushioned avalanche—one that fell so rapidly en masse that it trapped and com-

pressed air beneath itself—crashed down off the Chaos Crags about 300 years ago. The air acted as a lubricant, enabling the avalanche to rush across the valley at more than 160 kilometers (100 miles) per hour. It pushed 100 meters (400 feet) up the side of Table Mountain, before losing its momentum and surging back down across Manzanita Creek.

Lassen geothermal areas—Sulphur Works, Bumpass Hell (largest), Little Hot Springs Valley, Boiling Springs Lake, Devils Kitchen and Terminal Geyser—offer fumaroles, boiling mud pots, and waters above 100°C (212°F). Some of these thermal features are getting hotter. Scientists think that Lassen Park and Mount Shasta are the most likely candidates in the Cascades to join Mount Saint Helens as active volcanoes.

Lassen Peak, the world's largest plug dome volcano, erupts in May 1914. The ghost image shows the former profile of an-

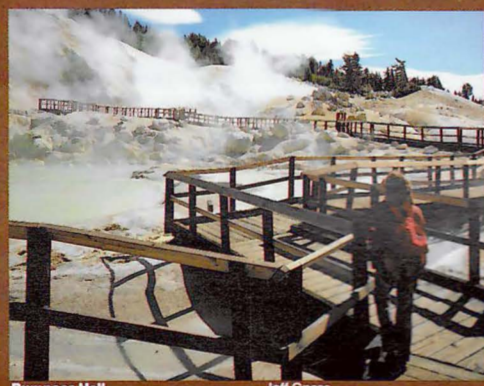
cestral Mount Tehama, an earlier volcano. Lassen Peak originally developed as a volcanic vent on Mount Tehama's northern

flank. This is explained in 'The Pacific Ring of Fire and Lassen' below. The artwork was painted by Lloyd K. Townsend from

historical and aerial photographs.



Little Hot Springs Valley

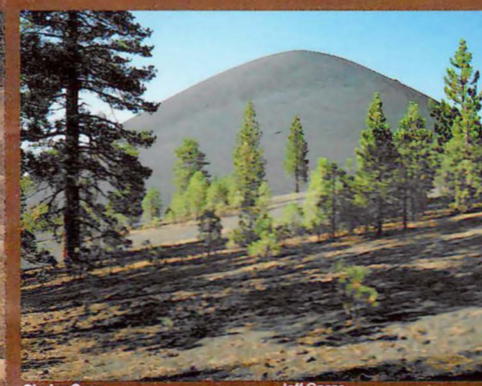


Bumpass Hell

Jeff Gnass



Painted Dunes



Cinder Cone

Jeff Gnass



Atsugewi pounding basket



Pioneer program

The Pacific Ring of Fire and Lassen

Lassen Peak is but one of many volcanoes—active, dormant, or extinct—that extend around the Pacific Ocean in a great Ring of Fire. This zone of volcanoes and earthquakes marks the edges of the Earth's crust. Volcanic and seismic disturbances occur as these great slabs override or grind past each other.



Ancestral Mount Tehama. About 500,000 years ago a great Pacific Ring of Fire stratovolcano, Mount Tehama, gradually built up here through countless eruptions. Before Lassen Peak was em-

placed, Mount Tehama had collapsed, but its caldera was breached and no large lake ever developed as did Crater Lake in Oregon. Mount Tehama's main vent was probably what is now the park's

Sulphur Works. Remnants of its caldera flanks are Brokeoff Mountain, Mount Diller, Pilot Pinnacle, and Mount Conard. Connect these peaks in a circle on the map to envision Mount Tehama's base—more than 18 kilometers (11 miles) wide.

Lassen Peak. Lassen Peak began as a volcanic vent on Mount Tehama's northern flank. It is considered the world's largest plug dome volcano, rising 610 meters (2,000 feet) to attain the height of 3,200 meters (10,457 feet) above sea level. Eruptions of Mount Harkness produced the bulk of the park's lava. Cinder Cone is also a volcano.

How do landscapes recover from volcanic episodes? That question, asked anew since Mount Saint Helens erupted in 1980, has been being answered here for more than 65 years—since Lassen Peak quieted down.

The Devastated Area most visibly illustrates the slow but relentless return of Earth's green mantle of plants, but many areas of the park are important post-volcanism plant succession sites. Both the Devastated Area, denuded by volcanic activity, and the Chaos Jumbles, denuded by an air-cushion avalanche, are recovering directly to conifers without preparation by herbaceous plants.

This fact observed at Lassen corrects earlier theories. Many disturbed areas here are being reforested with young forests that are more varied than the mature forests that once stood on them. The apparent reason is lack of competition during the earlier stages of recovery. In the Chaos Jumbles, competition will eventually crowd out four of the eight coniferous species presently recovering the area.

Rocky lands at lower park elevations largely result from geologic disturbances. Such nearly soil-free areas can show classic revegetation patterns. The Devastated Area is undergoing a successional process of revegeta-

tion, with herbs, grasses, shrubs, and finally trees retaking the land. Lodgepoles, generally the first trees here, in time give way to other pines and firs. Although eruptions occurred in the northwestern part of the park in 1851—at Cinder Cone and Fantastic Lava Beds—these areas show no significant vegetative recovery.

The park's plantlife mixes species of the Sierra Nevada to the south and the Cascade Range. The result is a relative abundance of species. The park boasts some 715 plant species, but nearby Mount Shasta has only 485 species. About 24 Sierran species are at the north-

ern limit of their range here. About 14 Cascadian species are at their southern limits.

The catastrophic events that created the Devastated Area and Chaos Jumbles also created Hat and Manzanita Lakes. These are indeed fortunate landscape recoveries for today's park visitor! Hat Lake undergoes succession, too, however. Rapidly filling with debris from higher elevations, Hat Lake will soon disappear, leaving a meadow that will one day give way to forests.

The Lassen area was a meeting point for four Indian groups: Atsugewi, Yana, Yahi, and Maidu. Because of its weather and snow conditions, generally high elevation, and its seasonally mobile deer populations, the Lassen area was not conducive to year-round living. These Indian groups encamped here in warmer months for hunting and gathering. Basketmakers rather than potters, they have left few artifacts other than stone points, knives, and metates. A Yahi Indian named Ishi turned up in Oroville in 1911. He had never mixed with whites before, and his tribe was thought nonexistent. He lived out his days at the University of California Museum,

where he was an invaluable ethnological resource. Ishi was considered the last Stone Age survivor in the United States.

History here generally describes the period from 1840 on even though mountain man Jedediah Smith passed through in 1828 on his overland trek to the West Coast. California's gold rush in 1848 brought the first settlers. Two pioneer trails, developed by William Nobles and Peter Lassen, are associated with the park. In 1851 Nobles discovered an alternate route to California, passing through Lassen. Sections of this Nobles Emigrant Trail (see map) are still visible in the park. Lassen, for

whom the park is named, guided settlers near here and tried to found a city. Mining, power development projects, ranching, and timbering were all attempted here. The area's early federal protection saved it from heavy logging.



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B.F. Loomis documented Lassen Peak's most recent eruption cycle and promoted the park's establishment. He photographed the eruptions, explored geologically, and developed an extensive museum collection. The Loomis Museum was closed in 1974 because it was located in a potentially hazardous area. Samples of the Loomis collection are displayed at the Manzanita Lake information station.

The Landscape Recovers

Indians, Emigrants, and Historians

Lassen Volcanic

Regulations and Safety.

Keep pets on a leash at all times; they are not permitted on trails, in buildings, at evening talks, or in the backcountry. **Fires.** Don't leave fires unattended. Pack out all non-burnable trash. **Trail Use.** Stay on

trails; don't take shortcuts. Bicycles and motor vehicles are prohibited on trails. **Weapons.** Use or display of weapons is prohibited. **Natural Features.** Leave all natural features as you find them. **Bears.** Bears are present

but not often encountered. Give them the right of way. Do not feed wild animals.

Thermal Area Warnings. Boiling water may be present at or near the surface in park thermal areas. Stay on trails and boardwalks where provided. The crusts over some thermal features are brittle. Breaking

through them can plunge you into boiling water. Keep close watch and physical control over small or young children. The man who named Bumpass Hell lost a leg as a result of falling into the boiling waters.

Access and Information

Access. AMTRAK serves Redding and Chico. Airlines serve Redding, Reno, and Chico. Private planes can land at Chester and Red Bluff. Redding and Red Bluff offer car rentals. Buses serve Mineral from Red Bluff and Susanville. See small map for highways. Park entrance fees are charged at Manzanita Lake, the Southwest Entrance, Butte Lake, and Warner Valley. **Information.** Park topographic maps and other publications may be purchased at information centers, or by mail from the nonprofit Loomis Museum Association at the park address. Write for a free list. The *Lassen Park Guide* newspaper lists all area accommodations and services (including park facilities accessible by wheelchair), and activities, including winter activities, in season. Request a free copy at a park information station, or write to the Superintendent,

Lassen Volcanic National Park, P.O. Box 100, Mineral, CA 96063-0100. Telephone (916) 595-4444.

Campgrounds

The park's seven campgrounds (fees charged) operate on a first-come, first-served basis. No reservations can be made. **WARNING:** All campgrounds are above 1,700 meters (5,650 feet); persons with problems aggravated by high elevation should consult their physician. Limited sites for organized groups of 25 persons or less are available (fee charged); write to the superintendent for information and reservations (required). Camping is prohibited along roadsides or in picnic areas.

Activities

Auto Tour and Road Guide. The scenic main park

road loops around three sides of Lassen Peak. It offers access to trails, lakes, and volcanic and geothermal features. Ask about the park's auto tour, and the *Road Guide to Lassen National Park* (fee), at any information center. Roadside markers are keyed to the *Road Guide*. Park roads were designed for scenic driving. The speed limit is 56 kilometers per hour (35 mph) or as posted. Do not stop on roadway; use turnouts for viewing wildlife or scenery. Report accidents and emergencies to the nearest park ranger.

Hiking. The park's 230 kilometers (150 miles) of trails include a 27-kilometer (17-mile) section of the Pacific Crest Trail. The *Lassen Trails* booklet describes popular hikes. Self-guiding trails make good introductions both to hiking and to the park. **Hiking Safety.** If you live at a low elevation, the park's generally high



elevations will likely leave you short of breath. Take time to get acclimatized. Avoid exposed terrain during lightning storms. Do not hike alone, and tell a ranger your trip plans and expected return. Overnight backcountry use requires a wilderness permit; see Backcountry Use. Technical climbers should talk with a ranger before climbing here. Volcanic rock is generally unstable and poorly suited to rock climbing.

Fishing and Boating. Fishing requires a valid California fishing license and knowledge of park regulations and catch and possession limits. **Boating.** Rowboats, canoes, and other non-power boats can be used on all park lakes except Reflection, Emerald, Helen, and Boiling Springs. Power boats—including electric motors—are prohibited on park waters. A U.S. Coast Guard-approved personal flotation device

is required for each occupant in a boat. There are no boat rentals in the park.

Backcountry Use. A wilderness permit is required for any overnight backcountry stay. Ask about closed areas when applying for this free permit. Permits are issued for one trip at a time at park headquarters (see small map) or at contact stations. They also can be requested two weeks before your trip by mail or telephone from the superintendent. **Stock Use.** Pack and saddle stock may stay overnight only in the corrals provided at Butte Lake, Summit Lake, and Juniper Lake. Reservations are required. There is a small corral near the northern park boundary for Pacific Crest Trail users.

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