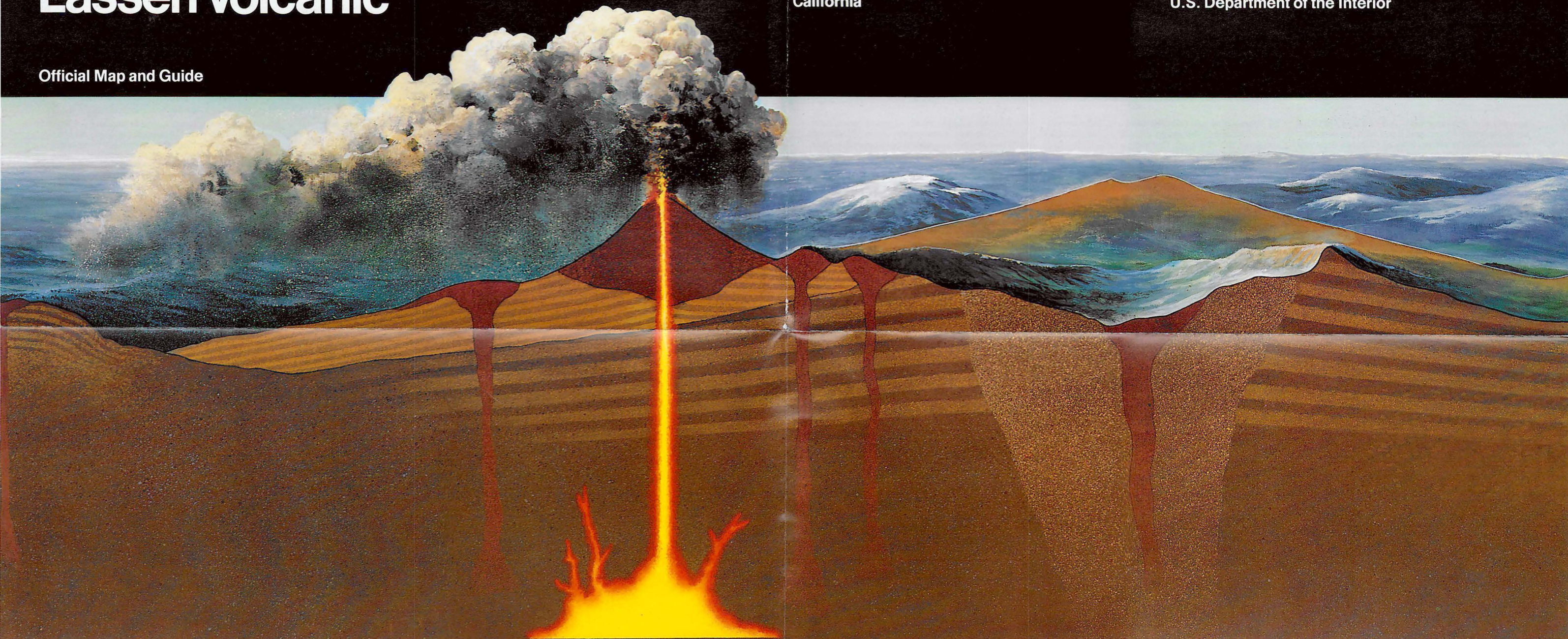




The Mountain Reawakens

In May 1914 Lassen Peak burst into eruption, beginning a 7-year cycle of sporadic volcanic outbursts. The climax of this episode took place in 1915, when the peak blew an enormous mushroom cloud some 7 miles 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. The park is a compact laboratory of volcanic phenomena and 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 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 reduced Lassen's superlative status, but it increased the park's significance as an over 70-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 compressed air beneath itself—crashed down the Chaos Crags about 300 years ago. The air acted as a lubricant, enabling the avalanche to

rush across the valley at more than 100 miles per hour. It pushed 400 feet up the side of Table Mountain, before losing its momentum and surging back down across Manzanita Creek.

Lassen geothermal area—Sulphur Works, Bumpass Hell (largest), Little Hot Springs Valley, Boiling Springs Lake, Devils Kitchen, and Terminal Geyser, offer bubbling mud pots, steaming fumaroles, and boiling water. Some of these thermal features are getting hotter. Scientists think that the area of Lassen Volcanic National Park and Mount Shasta are the most likely candidates in the Cascades to join Mount Saint Helens as active volcanic areas.

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

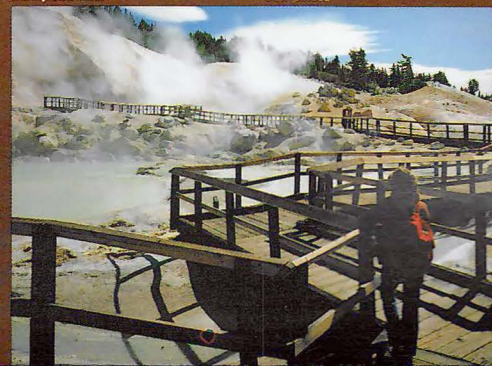
flank. This is explained in "The Pacific Ring of Fire and Lassen" below. The artwork was painted by Lloyd K. Townsend from

historical and aerial photographs.

Little Hot Springs Valley



Bumpass Hell



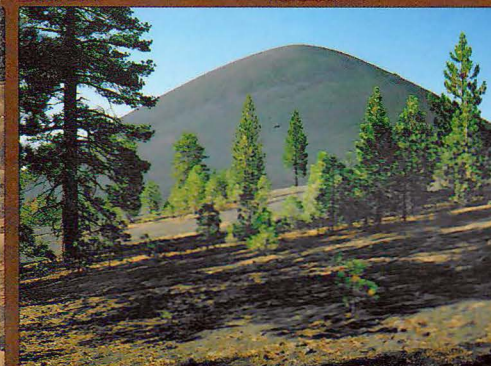
Jeff Gnass



Painted Dunes



Cinder Cone



Jeff Gnass

Atsugewi pounding basket



Pioneer program



The Pacific Ring of Fire and Lassen

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

The theory of plate tectonics holds that as the expanding oceanic crust is thrust beneath the continental plate margins, it penetrates deep enough into the Earth to be partly remelted. Pockets of molten rock (magma) result. These become the feeding chambers for volcanoes.



Ancestral Mount Tehama. About 600,000 years ago a great Pacific Ring of Fire stratovolcano, Mount Tehama, gradually built up here through countless eruptions. Before Lassen

Peak was emplaced, Mount Tehama had collapsed, but its caldera was breached and no lake 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 Brokenoff Mountain, Mount Diller, Pilot Pinnacle, and Mount Conard. Connect these peaks in a circle to envision Mount Tehama's base—more than 11 miles wide.

Lassen Peak. Lassen Peak began as a volcanic vent on Mount Tehama's northern flank. Considered the world's largest plug dome volcano, it rises 2,000 feet to an elevation of 10,457 feet. The park's lava came from many vents. Recent geological evidence indicates that Cinder Cone, also a volcano, erupted in the 18th century.

How do landscapes recover from volcanic episodes? That question, asked anew since Mount Saint Helens erupted in 1980, has been answered here for more than 70 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-cushioned 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 trees 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 Landscape Recovers

The Devastated Area is undergoing a successional process of re-vegetation, with herbs, grasses, shrubs, and, finally, trees retaking the land. Lodgepoles, generally the first trees, give way in time to other pines and firs. Although eruptions occurred during the 18th century 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 779 plant species, but nearby

485 species. About 24 Sierran species are at the northern limit of their range here. About 14 Cascadian species are at their southern limit.

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 is undergoing succession too. Rapidly filling with debris from higher elevations Hat Lake will soon disappear, leaving a meadow that will one day give way to forests.

Indians, Emigrants, and Historians

The Lassen area was a meeting point for four Native American 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 Native American groups camped here in warmer months for hunting and gathering. Basketmakers rather than potters, they left few artifacts other than stone points, knives, and metals. A Yahi Indian named Ishi turned up in Oroville, Calif., in 1911. He had never mixed with whites before, and his tribe was thought to be nonexistent. He lived out his days

at the University of California Museum in Berkeley, where he was an invaluable ethnological source. Ishi was considered the last Stone Age survivor in the United States.

History here generally describes the period from 1840, even though 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 the



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 establish a city. Mining, power development projects,

ranching, and timbering were all attempted here. The area's early federal protection saved it from heavy logging.

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 is open in summer only. Park publications, exhibits, and ranger services are available.

Visiting Lassen Volcanic

Access and Information Airlines and AMTRAK serve Redding, Chico, and Reno with car rentals available. Private planes land at Chester. Fees are charged at all park entrances. Buy park maps and publications at information centers or by mail from the nonprofit Lassen Loomis Museum Association; contact the park for a free list. The park newspaper lists area accommodations, services (including facilities accessible by wheelchair), and seasonal activities. Get a free copy at a park information station or contact: Lassen Volcanic National Park, P.O. Box 100, Mineral, CA 96063-0100; 530-595-4444; or www.nps.gov/lavo.

Campgrounds Eight campgrounds operate first-come, first-served (fees charged, no reservations). **WARNING:** All campgrounds are above 5,650 feet of elevation; ask your doctor about health problems at high altitudes. Organized groups of up to

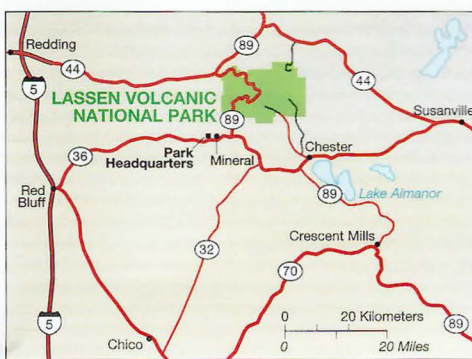
25 people may call 530-595-4444 ext. 5184 for information about the group campsites (reservations required, fee charged). Camping at roadsides or in picnic areas and parking lots (except at the Southwest Walk-in Campground) is prohibited.

Auto Tour The main road around three sides of Lassen Peak offers entries to trails, lakes, and volcanic and geothermal features. You may buy the *Road Guide to Lassen Volcanic National Park* at entrance stations and information centers. The speed limit is 35 mph or as posted. Do not stop on the roadway; use turnouts for viewing wildlife or scenery. Report emergencies to a ranger or call 911.

Hiking The 150 miles of park trails include 17 miles of the Pacific Crest Trail. Self-guiding trails make good introductions to hiking. **Hiking Safety and Regulations:** • Get used to high elevations in

the park gradually. • Avoid exposed areas during lightning storms. • Never hike alone. • Overnight backcountry use requires a backcountry permit (free). • Rock climbing is discouraged anywhere in the park because volcanic rock is unstable. Talk to a ranger before rock climbing. • To purify drinking water here you must first filter it with at least a 2-micron filter and then also either boil it for five minutes or treat it with iodine tablets.

Fishing and Boating Anglers need a California fishing license and must know park regulations and limits. Only non-power watercraft can be used on park lakes. Power boats—including those with electric motors—are prohibited. Boating is prohibited on Reflection, Emerald, Helen, and Boiling Springs lakes. Coast Guard-approved personal flotation devices are required for each occupant of a watercraft. Boats must be removed from Man-



The park is in northern California about 50 miles east of Red Bluff and Redding.

zanita Lake and its lakeshore nightly. There are no boat rentals in the park.

Backcountry Use A free backcountry permit is required for any overnight backcountry stay. Permits are issued for one trip at a time at park headquarters or contact stations. Or you may request permits at least two weeks in advance: write or call the park, and also ask about closed areas. **Fires** Only self-contained stoves are permitted; wood fires are prohibited. **Stock Use** Pack and saddle stock may stay overnight only in corrals provided at Summit Lake and Juniper Lake (reservations are required). A small corral near the park's northern boundary is for Pacific Crest Trail users only.

Regulations and Safety For a safe visit follow these regulations. • Pets must be leashed and are prohibited on trails and boardwalks, in the back-

country, at evening talks, and in buildings. • Build fires only in the campground fire grates; do not leave fires unattended. Open fires are prohibited in the backcountry. • Pack out all trash. • Stay on trails; do not take shortcuts. • Bicycles, motor vehicles, and all other wheeled conveyances are prohibited on trails. For wheelchair use on trails, ask at contact stations. • Use or display of weapons is prohibited. • Do not disturb any natural features. • Bears are present; store food properly. Do not feed wild animals. • Thermal Warnings: Boiling water may be at or near the surface in thermal areas. Stay on trails and boardwalks. Crusts over thermal features can be brittle; if you break through you will be in boiling water. Keep watch and physical control over all young children. Bumpass Hell is named after a man who lost a leg from falling into boiling water.

NPS/CDC 2001—472-470/40082 Reprint 2001 Printed on recycled paper

