

Crater Lake

National Park Service
Oregon
U.S. Department of the Interior



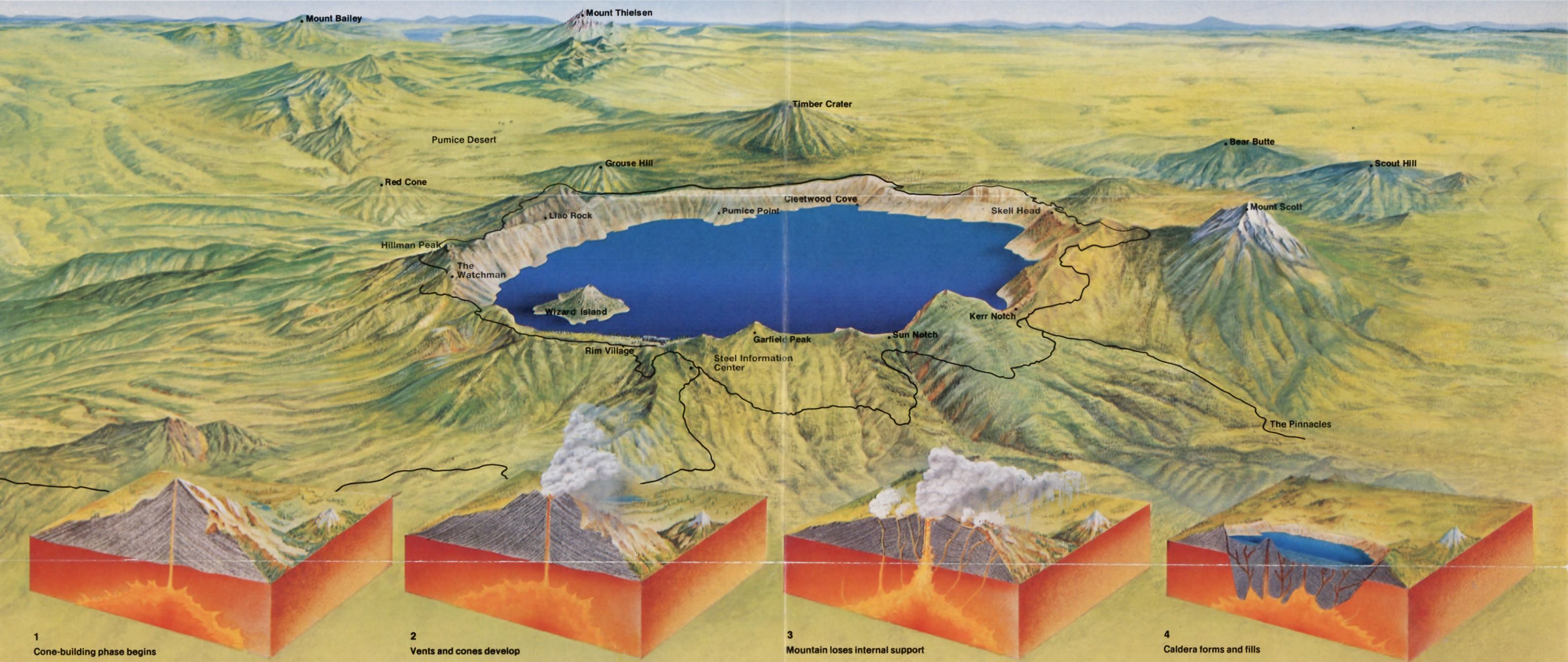
Crater Lake, photograph by Ray Atkeson

The beauty and intense blue of Crater Lake have awed people for generations. Five miles wide and ringed by cliffs almost 2,000 feet high, the lake rests in the shattered remnants of a volcano called Mount Mazama, which erupted and collapsed into itself 7,700 years ago. Later eruptions formed Wizard Island and other volcanic features, now hidden under the lake. Crater Lake filled with rain and melted snow. At 1,943 feet deep, it is the deepest lake in the United States and one of the deepest in the world.

Mount Mazama began to grow half a million years ago. Humans have lived around the mountain for more than 10,000 years and probably witnessed its cataclysmic eruption. Crater Lake has long played a significant role in the cultures of local American Indian tribes. In 1853 prospectors in search of gold found the lake, and, as word spread, people began visiting from all over the world. William Gladstone Steel first visited in 1885. Largely as a result of his efforts, Crater Lake became a national park on May 22, 1902.

Scientists have investigated Crater Lake for more than a century. They have plumbed its depths, scaled its cliffs, and explored it with sonar, submarines, and scientific instruments. The eruption that collapsed Mount Mazama was the largest in North America for hundreds of thousands of years. The lake that formed in its shattered remnants is one of the purest and most pristine in the world. This environment provides scientists with an opportunity to study the subtle effects of human influence and global forces.

Today, forests and canyons cover the mountain's outer slopes. Snow blankets the landscape for eight or nine months of the year. Wildflowers bloom late and disappear quickly in the harsh pumice soil, thriving only along streams. Ravens, jays, nutcrackers, and ground squirrels search for seeds along the caldera rim. Deer, elk, black bears, marmots, foxes, porcupines, pine martens, and pikas are present but seldom seen. Visitors wonder about the cataclysmic origins of Crater Lake and marvel at its placid beauty.



Artist Jaime Quintero's painting creates a non-existent overlook on a perfectly clear, pollution free, mid-summer day when the atmosphere is perfectly oxygen balanced. The painting is not selective, as your eye is, but shows a wide-angle view. The vertical and horizontal scales are identical, with no exaggeration. The cross section of the rim and lake (below) cuts through Wizard Island to take in the lake's deepest part.

- Block Diagrams** The insets (above) show volcanism stages leading to Mount Mazama's collapse:
- 1 Cone-building began a half million years ago. Magma from the Earth's interior spewed out.
 - 2 Lesser magma vents and cones developed on the mass, weakening it.
 - 3 About 7,700 years ago so much mass blew out of the cone that the mountain had no support and collapsed.
 - 4 It created the caldera that Crater Lake now occupies.

A Vast Volcanic Region The plateau base of the Cascade Range was built as Earth's crust folded and uplifted, pushing seas westward. Molten rock pushed toward the surface, creating both violent eruptions and the welling up of lava through enormous cracks. In recent geologic time—the past 750,000 years—explosive eruptions built a string of volcanoes on this plateau base. This Cascade Range of volcanoes extends from Canada's Mount Garibaldi to Lassen Peak in northern California. One of these great volcanoes, Mount Mazama, now holds Crater Lake.

Mount Mazama For half a million years this volcano produced massive eruptions interrupting long periods of quiet. Ash, cinders, and pumice exploded up, building the mountain to a height of about 12,000 feet. Parasitic cones on Mazama's flanks created Mount Scott and Hillman Peak. Glaciers periodically covered Mount Mazama's flanks and carved out U-shaped valleys, such as Munson Valley and Kerr Notch. The climatic eruptions of Mount Mazama occurred about 7,700 years ago. Ash from these eruptions lies scattered over eight states and three Canadian provinces; some 5,000 square miles were covered with six inches of Mazama's ash. In the park's Pumice Desert (see map) ash lies 50 feet deep. The eruptions produced more than 150 times as much ash as did Mount St. Helens on May 18, 1980. The Mazama magma chamber was emptied and the volcano collapsed, leaving a huge bowl-shaped caldera. The high mountain was gone. At first the caldera's floor was too hot to hold water. Renewed volcanism sealed the caldera and built the Wizard Island and Merriam cones, volcanoes within a volcano.

The Lake Forms As volcanic activity subsided water began to collect. For the past 5,000 years the volcano has not stirred. Springs, snow, and rain began to fill the caldera. As the lake deepened and widened, evaporation and seepage balanced the incoming flow. The depth now varies less than three feet annually in this, the Nation's deepest lake.

A Closed System No stream runs into or out of the lake, so it is considered a closed ecological system. From its beginning Crater Lake contained no fish. Six species were introduced in historic time. Of these, two remain: rainbow trout and kokanee salmon. To protect the natural system, fish are no longer stocked. Get fishing regulations from park rangers.

Why So Blue? Light gets absorbed color by color as it passes through clear water. First the reds go, then orange, yellow, and green. Last to be absorbed are the blues. Only the deepest blue gets scattered back to the surface where you see it as the color of the water. The water is of course no more blue than the sky is blue.

The Name Crater Lake was named in 1869 by James Sutton, editor of the *Oregon Sentinel* of Jacksonville, Oregon. Sutton and a party of explorers lowered a boat over the cliff to the shore of the lake, rowed across to Wizard Island, and climbed to its summit. They were the first known people to have explored the island.

Facts and Figures Crater Lake is the deepest lake in the United States, the second deepest in the Western Hemisphere, and the seventh deepest in the world. Here are some statistics to take home with you:

Maximum lake depth	1,943 ft
Average lake depth	1,148 ft
Maximum lake width	6 mi
Lake surface elevation	6,173 ft
Wizard Island elevation	6,940 ft
Wizard Island height above water	767 ft
Hillman Peak, highest point on rim	8,151 ft
Mount Scott, highest point in park	8,929 ft
Union Peak	7,709 ft
Rim Village elevation	7,100 ft
Precipitation, yearly average	66 in
Snowfall, yearly average	44 ft
Maximum snow depth at Park Headquarters	21 ft
Park size	183,224 acres

The volcanic cone called Wizard Island was built up after Mount Mazama collapsed to form the caldera in which Crater Lake and the island rest.

This cross-section of the lake and rim obscures the Phantom Ship, pictured below. This view was necessary to show the lake's deepest point.

Discovering Crater Lake and its Nature



About Your Visit

Visitor Centers Steel Information Center is open all year. It has information, backcountry permits, exhibits, map and publication sales, and first aid. Rim Village Visitor Center, open June through September, has information and map and publication sales.

Sinnott Memorial A paved pathway near Rim Visitor Center leads to the memorial overlook; open daily in summer. Here you find a clear view of the lake. Rangers give short geology talks.

Ranger-led Activities Summer campfire programs are presented at Mazama Campground amphitheater, in Mazama Village. Topics change nightly. Rangers lead hikes and offer special activities for children.

Boat Tours Narrated boat tours are offered by a concessioner and the National Park Service from late June to mid-September. The 1½-hour tour circles the inside of the caldera, with a stop at Wizard Island and a close-up look at Phantom Ship.

Camping Camp at Mazama Village and Lost Creek campgrounds or in the backcountry by permit. Campgrounds open when snow melts in early summer and are closed by snow in September/October. No hook-ups. Use only dead and down wood for campfires. Mazama Campground, in Mazama Village, has 213 sites, restrooms, showers, laundry, store, and a dump station. Lost Creek Campground, located three miles from Rim Drive on the road to Pinnacles, has 16 sites (tents only), water, and flush toilets.

The Park in Winter Rim Drive is closed by snow from mid-October to early July. Vehicle access is available only from Ore. 62 to Rim Village. Cross-country skiing and snow play are encouraged only on unplowed roadways. When skiing along the rim, watch for icy spots, snow cornices, and avalanche areas. Pets may not leave plowed roadways; they must be on a leash at all times.

Parking is allowed only at plowed parking lots; overnight parking by written permission only. Camping in parking lots is prohibited. Backcountry

permits are required for overnight snow camping. There is no gasoline available from mid-October through May.

Snowmobiles are permitted only on the north entrance road; see map on this brochure.

Park Regulations Hiking or climbing inside the caldera rim to reach the lake is permitted only on the Cleetwood Trail. Pets are prohibited in the backcountry and on all trails. Pets on a leash or otherwise physically restrained are permitted within

50 feet of roads and established parking areas, campgrounds, and picnic areas. Wild birds and other animals are part of the natural system and are protected within the park. Do not feed them. Dependency on human food may ruin wild animals' ability to survive the long winter season.

Park regulations require that rocks, plants, wildlife, and artifacts be left undisturbed for their natural and scientific values and for others to enjoy.

Exploring Crater Lake

Vistas Oregon 62 and the south access road lead to a year-round lake view. The north entrance road and Rim Drive are closed from mid-October to late June. Rim Drive is a 33-mile road that circles the caldera rim. Pullouts along the way provide scenic lake views. From the Rim Drive a spur road leads to the Pinnacles area of volcanic spires. The north entrance road crosses the Pumice Desert. The south access road follows Annie Creek Canyon.

Lodging, Meals, and Gifts Crater Lake Lodge, with dining and 71 guest rooms, is open from late May to mid-October. Motel units at Mazama Village are available from

early June to mid-October. Contact the park for information on making reservations.

Snacks, meals, and gifts are sold daily in Rim Village. Summer hours are 8 a.m. to 10 p.m. Winter hours are limited. The store at Mazama Village sells groceries and limited supplies from early June to mid-October.

Visitor Services Daily visitor services at park headquarters include information, first aid, backcountry permits, and map and publication sales. A post office in Steel Information Center is open Monday through Saturday year-round.

Trails Trails ascend Garfield Peak (1.7 mi), The Watchman (0.8 mi), and Mt. Scott (2.5 mi), and offer spectacular views. Cleetwood Trail (1 mi) provides the only access to the lake. The Pacific Crest Trail traverses the park. Park Headquarters Historic Trail (0.3 mi) is near Steel Information Center. Godfrey Glen (1 mi) is accessible for visitors with disabilities. Brochures are available for Annie Creek Canyon (1.7 mi) and Castle Crest Wildflower (0.5 mi) trails.

Gasoline Sales Gasoline is available next to the camper store at Mazama Village from early June to mid-October. Gasoline is not available in the park the rest of the year.

Safety and Regulations •Vehicle drivers and bicyclists should be cautious of one another on the narrow Rim Drive. •Drive within posted speed limits and wear seat-belts; they are required by regulation in all national parks. •Do not cross rock walls and barriers along the caldera rim; volcanic rock is unstable and could crumble beneath your feet. •Mountain bikes are allowed only on open, paved roads and on the unpaved Grayback Drive. •Do not disturb or remove any plants, animals, rocks, or cultural objects; all are protected by federal law.

In an emergency call 911.



Administration Crater Lake National Park is one of more than 380 parks in the National Park System. The National Park Service cares for special places saved by the American people so that all may experience our heritage. To learn about national parks and National Park Service programs in America's communities visit: www.nps.gov

More Information
Crater Lake National Park
P.O. Box 7
Crater Lake, OR 97604-0007
541-594-3000
www.nps.gov/crla

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