

Artist Jaime Quintero's painting creates for you a non-existent overlook on a perfectly clear, pollution-free, mid-summer day when the atmosphere is perfectly oxygen balanced at 4 p.m. 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 four insets show volcanism stages (above, left to right) leading to Mount Mazama's collapse: (1) Cone-building began a half million years ago. Magma from Earth's interior spewed out. (2) Lesser magma vents and cones developed on the mass, weakening it. (3) About 4,860 B.C. so much mass blew out of the cone that the mountain had no support and collapsed. (4) It created the caldera which Crater Lake now occupies.

A Vast Volcanic Region The plateau base of the Cascade Range was built as the Earth's crust folded and uplifted, pushing seas westward. Molten rock pushed forcefully toward the surface, creating both violent eruptions and the welling up of lava through enormous cracks. In recent geologic time—the past 2 million years—explosive eruptions built a string of volcanoes on this extensive 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 mighty volcano produced massive eruptions, interrupting long periods of quiet. Ash, cinders, and pumice exploded upward, building the mountain to a height of about 3,600 meters (12,000 feet). Parasitic cones on Mazama's flanks created today's Mount Scott, Hillman Peak, and The Watchman. Glaciers periodically covered Mount Mazama's flanks, and carved out the U-shaped valleys, such as Munson Valley and Kerr Notch. And then, about 6,800 years ago the climactic eruptions occurred. The Mazama

magma chamber emptied and the volcano collapsed, leaving a huge bowl-shaped caldera in its place. The high mountain was gone, vanished. It lies scattered over 8 states and 3 Canadian provinces: some 13,000 square kilometers (5,000 square miles) were covered with 15 centimeters (6 inches) or more of Mazama's ash. In the park's Pumice Desert (see map) ash lies 15 meters (50 feet) deep. The explosions were 42 times greater than those of Mount St. Helens in 1980. 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 in a volcano.

The Lake Forms After volcanic activity subsided, water began to collect. For the past 1,000 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 a meter (3 feet) annually, in this, the nation's deepest lake.

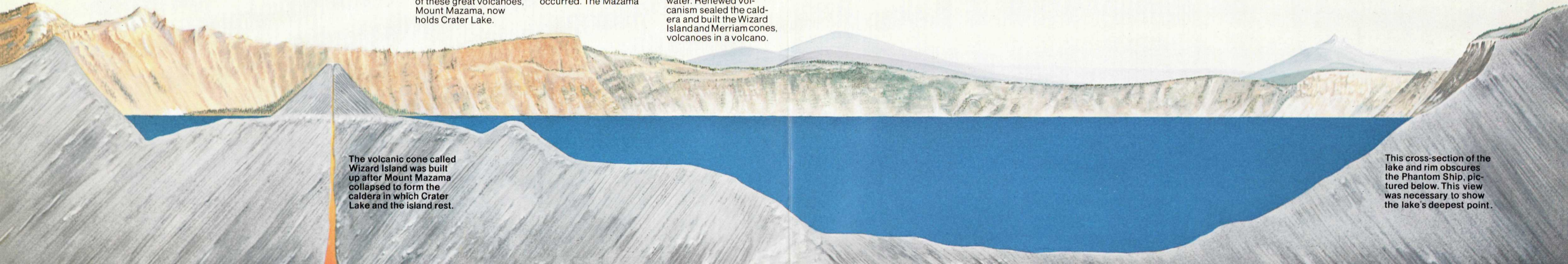
A Closed System No stream runs into or out of the lake, so it is considered a closed ecological system. From its beginning Crater Lake contained no fish. Six species were introduced in historic time. Of these, 3 remain: rainbow and brown trout and kokanee salmon. The fish feed mostly at the surface since the water is so pure and nearly devoid of food. Fish are no longer stocked, to protect the natural system. Obtain 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 reflected back to the surface—from as deep as 90 meters (300 feet), the natural limit of penetration—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 An early visitor named the lake, thinking it lay in a crater, a vent from which eruptions occur. But the lake sits in a caldera formed by the volcano's collapse.

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

Maximum lake depth	589 m (1,932 ft)
Average lake depth	457 m (1,500 ft)
Maximum lake width	9.7 km (6 mi)
Lake surface elevation	1,882 m (6,176 ft)
Wizard Island elevation	2,115 m (6,940 ft)
Wizard Island height above water	233 m (764 ft)
Hillman Peak, (highest point on rim)	2,488 m (8,163 ft)
Mount Scott, (highest point in park)	2,720 m (8,926 ft)
Union Peak	2,346 m (7,698 ft)
Rim Village elevation	2,164 m (7,100 ft)
Precipitation, (yearly average)	175 cm (69 in)
Snowfall, (yearly average)	15 m (50 ft)
Maximum snow depth at Rim Village	5.5 m (18 ft)
Park size: 74,114 hectares/183,180 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 part.

Discovering Crater Lake and its Nature



Fawn



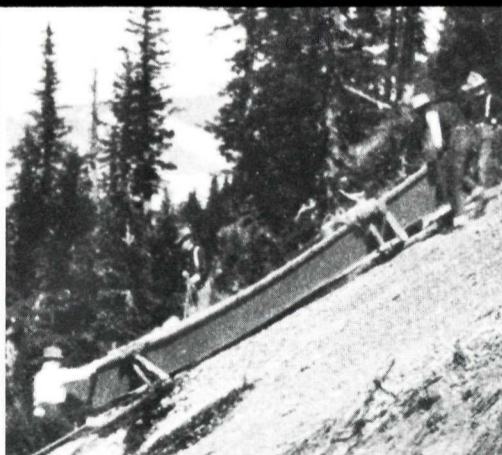
Klamath Indian



Crater Lake Lodge



Common monkeyflower



Launching the Start, 1903



Phantom Ship



Cross-country skiing

Man and Mazama

Fiery avalanches sometimes interrupted the lives of Native Americans near Mount Mazama more than 6,000 years ago. These people interpreted Mazama's violent eruptions before its collapse as a war between two gods, Liao and Skell. Indeed, archeological evidence suggests that human beings witnessed this cataclysmic event. Shamans in historic time forbade most Indians to view the lake, and the Indians offered no information about the lake to pioneers who crisscrossed the area for 50 years without discovering it. In 1853, while searching for the Lost Cabin Gold Mine, a small party of prospectors, including John Wesley Hillman, accidentally "discovered" Crater Lake.

In 1886, Captain Clarence E. Dutton commanded a U.S. Geological Survey party to sound the depth of Crater Lake. The *Cleetwood*, their 8-meter-(26-foot) long boat, weighed nearly half a ton and required 35 men and 65 horses and mules to carry it up the roadless mountain. Dutton's party lowered the *Cleetwood* down a steep 450-meter (1,500-foot) avalanche chute to the water's edge. Off *Cleetwood*'s stern a piece of pipe on the end of a roll of piano wire sounded the lake at 168 positions determined by lookouts atop The Watchman, the rim peak later named for this function

Their deepest wire sounding of 608 meters (1,996 feet) was amazingly close to the sonar measurement of 589 meters (1,932 feet) officially recorded in 1959.

As a Kansas schoolboy, William Gladstone Steel read of Crater Lake in a newspaper used to wrap his lunch. When he first saw the lake his commitment to visit it became a pledge to preserve this natural wonder somehow. Steel lobbied for 17 years for a national park. His perseverance paid off: Crater Lake was established as a national park on May 22, 1902.

The Natural Setting

Rolling mountains, volcanic peaks, and evergreen forests surround this enormous, high Cascade Range lake, recognized worldwide as a scenic wonder. On sunny summer days, neither words nor photographs can capture Crater Lake's remarkable blueness. For much of the year, a thick blanket of snow encircles the lake, creating a winter wonderland enhanced by crystal clear air. On the Earth clock, natural forces only recently constructed this landscape. Lava flows first formed a high plateau base, on which explosive eruptions then built the Cascade volcanoes. This mountain barrier forces moisture-laden Pacific winds to rise and drop heavy precipitation. Wind, water, and ice

continue to sculpt the landscape, and snow usually blankets the higher elevations from October to July. Snowfall provides most of the park's annual 175 centimeters (69 inches) of precipitation.

Heat from the summer sun, stored in this immense body of water, retards ice formation throughout the winter. Crater Lake rarely freezes: the last time was in 1949. The mountain barrier that extracts moisture from the maritime southwest winds also retards arctic air movement from the northeast.

Forest species have adapted to much of the park's landscape. At higher elevations the snowpack precludes fire and insulates the roots of the mountain hemlocks, which grow to massive sizes despite the short growing season. Limbs of subalpine and shasta red fir flex under the heavy snows at higher elevations. Wind-shaped whitebark pines struggle in exposed places. Lodgepole pines pioneer disturbed areas on the mountain flanks and ponderosa pines prosper at lower elevations. A diversity of shrubs and wildflowers grows as moisture, soil, and sunlight conditions permit. Wildflowers bloom late and disappear early here, thriving in wet, open areas. In season you may see phlox, monkeyflowers, pearly everlasting, and knotweed.

Birds and other animals often seen are ravens, jays, nutcrackers, deer, ground squirrels, and chipmunks. Present but seldom seen are elk, black bears, foxes, porcupines, pine martens, chickaree squirrels, and pikas. Hawks, owls, juncos, chickadees, and nuthatches inhabit the backcountry. These creatures share complexities to the plant communities and to the natural forces whose influence the park is committed to protecting.

Fire is an important natural force in the lives of the plant and animal communities. Until recently, fire had been considered, for a century, an enemy of the forest. The long-practiced suppression of all fires had diminished animal habitats and impeded the germination of ponderosa pines. The National Park Service is committed to reestablishing fire's natural role. Both natural fire and prescribed burning now reduce the buildup of ground fuels that could feed disastrous forest fires.

Facilities and Services

Visitor Center During summer and fall the visitor center at Rim Village is open daily. Park rangers provide information, assistance, and backcountry permits. Services include displays, activity schedules, map and publication sales, and first aid. Sinnot Memorial A rock stairway

near the visitor center leads to the memorial overlook, open daily in summer. Here you find an unobstructed view of the lake. Outside, park rangers present a short geology talk each hour. Inside are geology and history displays.

Ranger-Led Activities Summer campfire programs are presented at the Mazama Campground amphitheater and at the Rim Center in Rim Village. Topics change nightly. Ranger-led hikes and special activities for children are offered. Snowshoe hikes are conducted between December and May on weekend afternoons, with snowshoes provided. Boat Tours From July through early September, narrated boat tours are offered by the Crater Lake Lodge Company and the National Park Service. The 2-hour tour circles the inside of the caldera and stops at Wizard Island, where visitors may hike or relax until the mid-afternoon return trip. Camping Camping is allowed only at Mazama and Lost Creek Campgrounds, or in the backcountry by permit. Campgrounds open when snow melts in early summer and are closed by snow in the fall. There are no showers or hook-ups. Use only dead and down wood for campfires. *Mazama Campground*, with 198 wooded sites located 13 kilometers (8 miles) south of Rim Village, has restrooms and a dump station. *Lost Creek Campground*, with 12 sites located

on the branch road 5 kilometers (3 miles) off the one-way eastern portion of Rim Drive, has water and pit toilets.

The Park in Winter

Rim Drive is closed by snow in winter. Vehicle access is available only from Oregon Route 62 to Rim Village. Crosscountry skiing and snow play are encouraged only on the unplowed roadways. When skiing along the rim watch for icy spots, snow cornices, and avalanche areas. Dogs must be on a leash. Pets may not leave plowed roadways.

Parking is allowed only at plowed pullouts. Overnight parking is by written permission only. Backcountry permits are required for overnight snow camping.

Snowmobiles are permitted only on the north entrance road (see map).

Crater Lake

Vistas Highway 62 and the south access road lead to a year-round lake view, but the north entrance road and Rim Drive are closed from mid-October to July. Rim Drive is a 53-kilometer (33-mile) roadway that circles the caldera rim. Pullouts provide scenic lake views. Part of Rim Drive is one-way clockwise (see map). From Rim Drive a spur road leads to the Pinnacles area of volcanic spires. The north entrance road crosses the Pumice Desert. The south road winds above Annie Creek Canyon.

Lodging The rustic Crater Lake Lodge, with dining room, is open at Rim Village from mid-June to early September. For lodging reserva-

tions, write to Crater Lake Lodge Company, P.O. Box 97, Crater Lake, Oregon, 97604, or telephone (503) 594-2511.

Coffee/Gift Shop Snacks, meals, gifts, and film are sold daily at the Coffee Shop. Winter hours are normally 9 a.m. to 4 p.m., snow conditions permitting, with hours extended during the summer. A camper store sells groceries and limited supplies from June through September.

Park Headquarters National Park Service administrative offices, located 4.8 kilometers (3 miles) south of Rim Village, are open daily all year. A U.S. Post Office, located in the admin-

istration building, is open weekdays in summer. Visitor services include information, first aid, backcountry permits, and map and publication sales. For information, telephone (503) 594-2211 or write: Superintendent, Crater Lake National Park, P.O. Box 7, Crater Lake, Oregon 97604. For emergencies only call (503) 594-2811.

Trails Trails ascend Garfield Peak (2.7 km/1.7 mi), The Watchman (1.3 km/0.8 mi), and Mt. Scott (4 km/2.5 mi), and offer spectacular views. Cleetwood Trail (1.7 km/1.1 mi) provides the only access to the lake. The Pacific Crest Trail traverses the park and connecting trails criss-

cross the backcountry. Information folders are provided on the Godfrey Glen (1.6 km/1 mi), Annie Creek Canyon (2 km/1.3 mi), and Castle Crest Wildflower (0.8 km/0.5 mi) trails.

Transportation For limousines between the park and Klamath Falls, Oregon, contact the Lodge at (503) 594-2511. The Lodge Company also offers two-hour van tours around Rim Drive each day.

Gasoline Sales The service station near park headquarters, 4.8 kilometers (3 miles) below Rim Village, sells gasoline from Memorial Day to October.

Safety Regulations Climbing inside the caldera rim to reach the lake is permitted only on the Cleetwood Trail. Pets must be on leashes at all times in the park, and they are not permitted on trails. Wild birds and other animals are part of

the natural system protected within the park. Do not feed them. Dependency on human foods may ruin wild animals' ability to survive the long winter season. Park regulations call for leaving rocks, plants, and wildlife undisturbed.



Bears You seldom will see bears, but they sometimes visit the campgrounds, attracted by odors of human food. Bears recognize and rip open coolers and invade portable kitchens. Keep a clean campsite. Lock all food and food items out of sight in car trunks.

Valuables Do not leave your valuables unattended. Lock them out of sight in your vehicle. Report any theft promptly to a park ranger.

