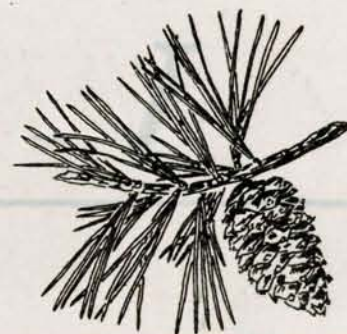




# CRATER LAKE REFLECTIONS



The Newspaper of Crater Lake National Park

Summer 1996



Photo by Jim Phelan

## WELCOME TO CRATER LAKE NATIONAL PARK

For nearly 100 years, visitors have traveled to view this treasure that has been protected for past, present, and future generations. Even before Crater Lake National Park was established in 1902, word of the beauty and scientific importance of Crater Lake had spread throughout the nation. As early as 1886, President Grover Cleveland set aside much of the current park area as a reserve to be protected for national park purposes. An overlapping Cascade Range Forest Reserve was similarly established in 1893 which covered a much larger area of the high Cascade Mountains. The mandate to protect this area has been a priority for years and is still our highest responsibility.

Today, visitors to Crater Lake are able to enjoy both the natural wonders of the park, as well as a rich history and tradition of protection. Cresting the caldera rim at sunrise will present to you the same spectacle that early travelers witnessed a century ago. A visit to the newly restored Crater Lake Lodge will provide a sense of the rustic ambiance which is so intertwined with the history of national parks. Protecting these values is the specific charge of the National Park Service, but it is also a responsibility proudly shared by all Americans.

Enjoy your visit and the timelessness of this place. And upon your return, notice how little has changed.

**Park Information**  
(541) 594-2211 Ext. 402

Al Hendricks  
Superintendent



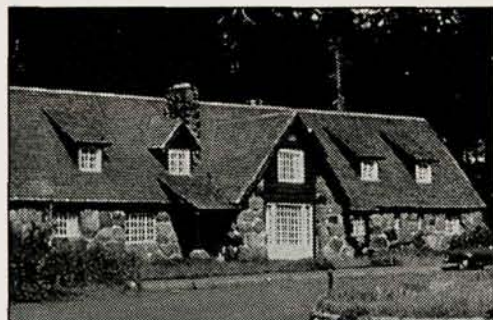
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# VISITOR ACTIVITIES

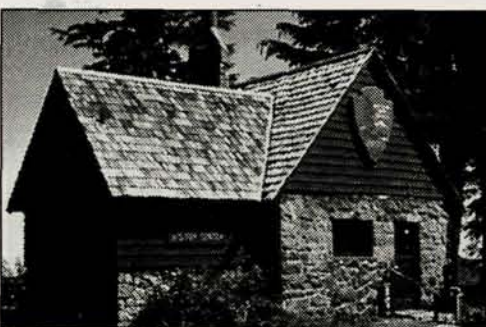
## A Good Place to Start Your Park Visit!



William G. Steel Visitor Center

There are two visitor information centers at Crater Lake National Park. Both are fully accessible to visitors with mobility impairments.

The **Steel Visitor Center** is located at park headquarters on the south side of the park. It is open all year from 9:00 am - 5:00 pm daily. A park ranger or volunteer is on duty to assist you with park information, trip planning, weather forecasts, and backcountry camping permits. An 18 minute film *The Crater Lake Story* is shown twice hourly throughout the day. Books, maps, posters, and other educational materials are available for purchase from the Crater Lake Natural History Association. Public restrooms and a U.S. Post Office are also located inside this building.



Rim Village Visitor Center

The **Rim Village Visitor Center** is perched on the south rim of the caldera, approximately 200 yards west of the Crater Lake Lodge. It is open daily during the summer months from May 31 through September 30. Hours of operation are from 8:30 am - 6:00 pm. General park information, backcountry camping permits, and educational sales items are available at this location.

## Jr. Ranger Programs

Visitors between the ages of 6 through 12 are encouraged to participate in the park's Jr. Ranger Program. Join a park ranger at the Mazama Campground Amphitheatre at 5:00 pm for this 45 minute program to learn more about Crater Lake National Park. Programs are held daily from June 23 - August 25. Jr. Ranger Handbooks and complete details on the program are available at either park visitor center.



## RANGER LED PROGRAM SCHEDULE



### Geology Talks

Step back in time to Mt. Mazama's fiery past and explore with a park ranger the theories relating to the formation of Crater Lake. How did Crater Lake come to rest inside the volcano? Find out during a 15 minute geology talk, presented on the hour from 10:00 am - 5:00 pm. Talks are held daily at the Sinnott Memorial Overlook (located behind the Rim Village visitor center). Talks will be held from June 23 through Labor Day and on a reduced schedule during the remainder of September.



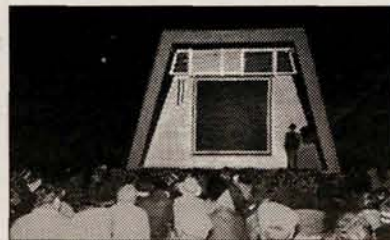
### Boat Tours

The Crater Lake Lodge Co. will be operating 1 hour and 45 minute ranger narrated boat tours of Crater Lake from late June through mid-Sept. During peak season, 9 tours/day will be offered with the first tour leaving at 10:00 am and the last tour departing at 4:30 pm. Tickets are sold at the parking lot near Cleetwood Cove trailhead. \*1996 ticket prices: \$12.00/adult, \$6.50/child, \$2.00 additional charge for passengers wishing to get off on Wizard Island. \* Prices subject to change. See page 6 for Cleetwood Cove trail advisory.



### Evening Programs

Join a park ranger for an in-depth discussion of various topics relating to the natural and cultural history of Crater Lake National Park. Specific topics for these 45 minute programs are posted at visitor centers and the campground. Programs are held nightly at the Mazama Campground Amphitheatre, located between D and E loops. Programs will be presented at 9:00 pm from June 23 - July 31 and at 8:30 pm from August 1 - Labor Day. The amphitheatre is accessible for visitors with mobility impairments.



### Guided Hikes

Ranger led hikes are presented daily June 29 - Sept. 2.  
-Garfield Peak nature walk. Meet at the flag pole near Rim Village Visitor Center at 2 pm. (45 min.)  
-Crater Lake Lodge and Rim Village historical walk. Meet at the flag pole near Rim Village Visitor Center at 1 pm. (30 min.)  
-Munson Valley Historic District walk. Meet at the flag pole near the Steel Information Center at 11 am. (30 min.)  
- The Watchman nature walk. (Aug.3 - Sept.2 only). Meet at Watchman Trailhead on West Rim Drive at 2:30 pm. (45 min.)





# SUPPORTING THE PARK

## Crater Lake Natural History Association



Established in 1942, the Crater Lake Natural History Association (CLNHA) is a non-profit organization dedicated to advancing educational and scientific activities within Crater Lake National Park. The funds generated from NHA sales of items purchased at our park visitor centers are invested directly back into the park, providing services such as publishing park related books and maps, printing this newspaper, and purchasing equipment and materials for educational and scientific research programs. The Crater Lake NHA also supports Oregon Caves National Monument in Cave Junction, OR.

Park visitors are invited to become members of the Crater Lake Natural History Association to learn more about the park's natural and cultural resources. Yearly memberships can be purchased at park visitor centers or by mailing in the coupon below. Members receive a number of benefits including:

- \* A 15% discount on books, videos, maps, and other sales items.
- \* Discounts from most other park associations including Yellowstone, Grand Canyon, Yosemite, and Mt. Rainier.
- \* A subscription to our park's semi-annual newspaper *Reflections*.
- \* The satisfaction of assisting the important educational and scientific programs of Crater Lake National Park.



1995 Field Seminar participants take a rest on the rim of the Wizard Island crater.



## Spending Time With Friends

Founded in 1993, the Friends of Crater Lake is a non-profit organization cooperating with the National Park Service in the stewardship of Crater Lake National Park's natural and cultural resources.

Activities have included volunteer work inside the park and regional meetings held in nearby communities. 1996 summer program activities will include:

**Fire Lookouts** - A workshop will be offered to train volunteers for duties associated with fire surveillance at the Watchman Peak and Mt. Scott fire lookout towers. Those interested must be able to hike over steep, exposed terrain. For more information contact: Paul Pearson, P.O. Box 15, Prospect, OR 97536; (541)560-3606.

**Trail Project Weekend** - Lost Creek Campground will be the base camp on July 26, 27, and 28 for various trail improvement projects. Participants can attend one, two, or all three days. For more information contact: Greg Hartell, 1277 Community Avenue, Klamath Falls, OR 97601; (541) 882-1134.

**Field Seminar** - "Roads Less Travelled" presented August 12-14 by former Crater Lake National Park Rangers Lloyd C. Smith and Larry B. Smith. The seminar will be a field exploration of the park's natural and cultural resources. Participants have the option to register to receive 3 college credits from Southern Oregon State College. Course fees will benefit the Friends of Crater Lake. For registration information, contact Larry B. Smith, (541)899-7402 or Lloyd C. Smith, (541) 479-5961.

Membership brochures for the Friends of Crater Lake are available at either park visitor center or write:

**Friends of Crater Lake**  
P.O. Box 88  
Crater Lake, OR 97604

*Reflections*  
Funded semi-annually by:  
Crater Lake Natural History Association

### Sign Me Up!



Individual Membership \$10

Family Membership \$15

Please send me your list of publications and other sales items offered by the Crater Lake Natural History Association

Name(s) \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

Mail to Crater Lake Natural History Association,  
P.O. Box 157, Crater Lake, OR 97604 (541)594-2211



## Nature Notes from Crater Lake

Nature Notes from Crater Lake is an annual publication produced by our park staff as an aid to visitors. This publication contains original research or observations that should be of interest to anyone wanting more than a fleeting glimpse of the park area. Authors include employees of the National Park Service, Volunteers-in-Parks, and members of the Friends of Crater Lake. Sponsored by the Crater Lake Natural History Association, Nature Notes can be purchased for \$1.50 at either park visitor center.



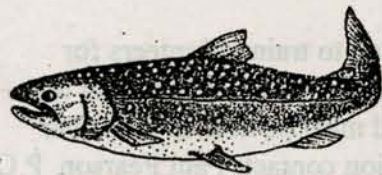
# PRESERVING THE PARK

The Division of Natural Resource Preservation and Research at Crater Lake National Park is looking forward to another busy summer of field activities. The many ongoing programs range from lake research and fisheries restoration to spotted owl surveys and revegetation projects. While important strides have been taken to learn more about the natural resources of our national park, the continued studies of these resources is critical to their preservation. Without this monitoring and research, the park is ill-equipped to measure and mitigate gradual and sudden impacts to sensitive natural resources.

By Scott Girdner, Fisheries Biologist

## Bull Trout

Efforts to stabilize and restore the native bull trout population of Sun Creek will enter into a fifth summer in 1996. The project was first initiated following the 1989 discovery of a remnant population of bull trout (*Salvelinus confluentus*). Bull trout are a Candidate Species under the Endangered Species Act and were once prevalent in several streams in the park. It was apparent that the small population remaining was being threatened by past introductions of non-native species.



The bull trout stabilization effort has centered around the removal of non-native brook trout using chemical poisoning and extensive and repeated electroshocking. The brook trout population has been dramatically reduced in an attempt to stabilize and increase the numbers of bull trout. 1996 should be an important year in determining how fast bull trout respond to decreased pressure from non-native fish species. Information learned from Crater Lake's bull trout restoration project will have important ramifications for the conservation of bull trout throughout the Northwest.



The "R/V Neuston" is the park's new lake research vessel.

## Lake Research

Initially begun in 1982 as an in-depth ten year study of Crater Lake, the park continues to research and monitor the lake's ecosystem on a long term basis. The monitoring program is a cooperative study effort between Crater Lake and Oregon State University scientists.

Each summer, researchers collect samples and gather data to analyze the lake's physical, chemical, and biological characteristics. During 1994, a record clarity reading of 40.8 meters (134 ft) was recorded using an 8 inch secchi disk. The significance of the lake's clarity cannot be understated, for the spectacular blue color of Crater Lake is a function of its depth and clear water.

The greatest human related impact to the lake continues to be the remaining population of rainbow trout and kokanee salmon introduced to the lake in the early 1900's. These fish have caused significant changes to the food web and zooplankton community composition in the lake.

Global monitoring continues to occur at Crater Lake. Weather stations on the caldera rim and the lake itself monitor climatic changes. Sediment traps are situated in the water column to monitor particles entering the lake. Water temperature changes and water mixing are studied using a thermistor chain located throughout the water column. These studies help refine the relationships between climate and lake ecology by looking at the precipitation and nutrients entering and mixing in the lake.

If a silvery colored boat on Crater Lake catches your eye, you're looking at the "R/V Neuston", the park's new lake research boat. The 33 foot long aluminum vessel allows biologists to safely study and monitor the lake during the summer and winter. The name "Neuston" refers to microscopic organisms that live on the surface of lakes at the interface between air and water.

## Spotted Owls

The park is in the fifth year of surveying the threatened northern spotted owl (*Strix occidentalis*). Survey efforts include historic locations, along with areas of the park's potential suitable owl habitat. During the 1995 season, a total of 30 owls were sighted, including four breeding pairs. The park's survey crew has been assisted by wildlife biologists from Oregon Department of Fish and Wildlife. The size of the park's population is not presently known.



## Revegetation Sites

The first phase of restoring the landscape around the historic lodge was completed in 1995. Plant materials were propagated in Corvallis, OR, from seeds and cuttings previously taken in the park. The landscape was designed to mimic the lodge's original landscape as much as possible. Road rehabilitation and future construction of a concession dormitory will also require vegetation efforts. Plant materials will be salvaged at construction sites prior to construction and replaced when projects are complete.



# FOCUS ON CRATER LAKE

## Lake Surface Level: Going Up, Down, or Staying the Same?

As visitors gaze upon the deep blue water of Crater Lake, one question often rises regarding the lake's surface level: Is it constant or changing?

We will begin to find our answer by reviewing Crater Lake's formation story. The lake lies inside a caldera created when the 12,000 foot Mt. Mazama volcano erupted and collapsed nearly 7,700 years ago. Post-eruption volcanic activity helped seal the caldera's floor to contain the water we know today as Crater Lake. The caldera is completely self-enclosed, with the walls rising to a height of 8,156 feet above sea level.

Because there are no inlets or outlets to Crater Lake, the only source of water is that received in the form of rainfall and snowmelt. Fortunately this area (being located along the crest of the Cascade Range) can count on receiving its fair share of precipitation - an average annual snowfall of over 500 inches, the equivalent of 69 inches of precipitation! Core samples from sediment layers on the bottom of the lake indicate that it took about 350 years for Crater Lake to fill to its present depth of 1,932 feet.

From data collected during the past 100 years, scientists have found the fluctuation of the water level to average only one to three feet per year. The maximum variation is recorded at 16 feet. The highest recorded surface level was reached in 1958 when the water level rose to 6,179 feet above sea level. The lowest recorded level occurred in 1942 when the water dropped

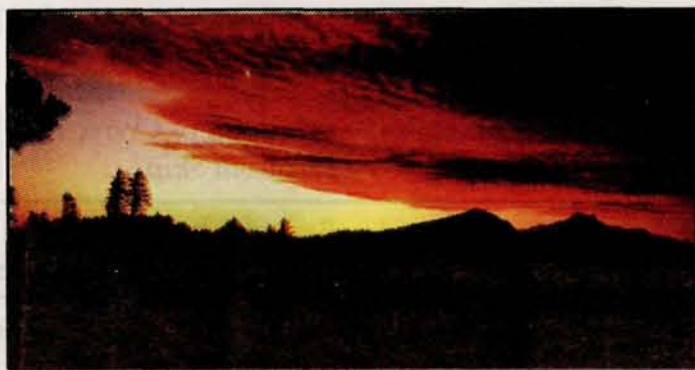


Lake surface level gauging station at Cleetwood Cove.

to a level of 6,163 feet. The relative stability of the water level can be attributed to the balance of input and output. Input consisting of precipitation, and output consisting of evaporation at the 21 square mile surface and seepage through the bottom and sides of the volcano.

Speculation and study has led to several points regarding prehistoric lake levels. Mature trees growing near the present water level and the absence of raised benches around the rim suggest that Crater Lake could not have been appreciably higher for the last 200 years. Can a drastic rise or fall be expected for our lake in the future? Perhaps, but in the meantime, a half million visitors every year will be able to enjoy looking at the lake as it appears today.

## A Photographer's Playground!



Sunset over Watchman and Hillman Peaks

The cover photo of *Reflections* was taken by park Maintenance Division employee Jim Phelan. When asked for a few photo tips on how to capture the famous "Crater Lake Blue" on film, Jim advises to shoot down into the lake from a high point, with the sun (shining from a blue sky) behind you. He also suggests the following locations and time frames:

**Sunrise:** Discovery Point, Cloud Cap, or Kerr Notch.

**Morning:** The Pinnacles, Rim Village (East of the visitor center), and Sinnott Memorial Overlook.

**Afternoon:** Garfield Peak Trail or Discovery Point.

**Sunset:** Watchman Peak.



## Just the Facts . . .

<b>Greatest depth:</b>	1,932 feet
<b>Lake surface elevation:</b>	6,176 feet
<b>Widest point:</b>	6 miles
<b>Narrowest point:</b>	4.5 miles
<b>Average lake temperature:</b>	38 degrees F
<b>Lake surface area:</b>	21 square miles
<b>Highest peak along the rim:</b>	Hillman Peak
<b>Last time the lake froze:</b>	1949
<b>Height of Wizard Island:</b>	764 feet



# EXPLORING PARK TRAILS

## Getting Away From it All . . .

Crater Lake National Park has over 90 miles of maintained hiking trails for you to explore! Excellent views of the lake and surrounding area can be found from various peaks throughout the park. For trail suggestions, current conditions, regulations, and other hiking information, stop in and talk with a park ranger at one of our two visitor centers. While enjoying the park trails, **please keep the following park regulations in mind:**

Hiking or climbing inside the caldera is strictly prohibited. The **only** safe and legal access to the lake's shore is the Cleetwood Cove Trail.

Dogs and other pets are not allowed on park trails.

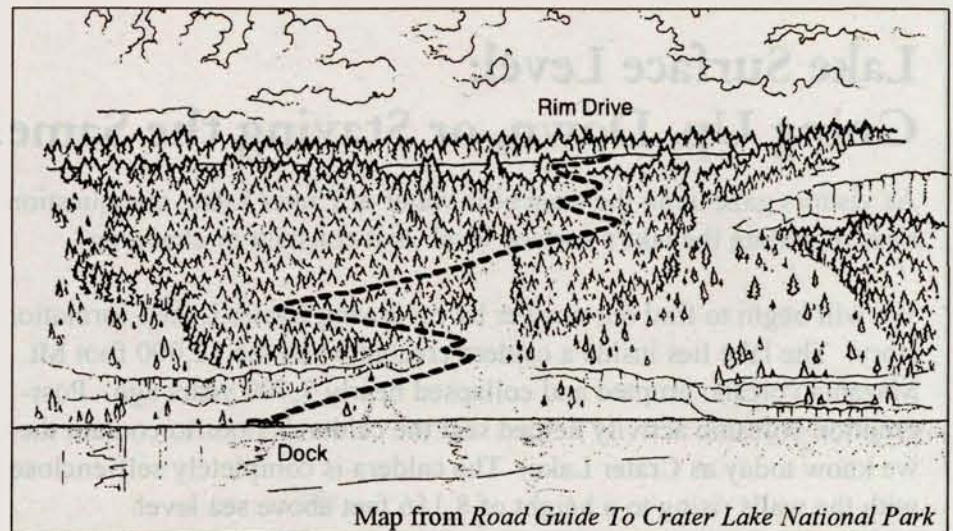
Free backcountry permits are required for anyone wishing to over-night in the backcountry. Permits are available at both park visitor centers during regular hours of operation.

Bicycles are not allowed on park trails. Bicycling is allowed on paved roads and the Grayback nature road.

Shortcutting on trails is prohibited. Please help us protect the vegetation and prevent erosion by obeying this regulation.

All park resources (rocks, plants, artifacts, etc.) are to be left undisturbed for other visitors to enjoy in the future.

Smoking is not permitted on any trail.



Map from *Road Guide To Crater Lake National Park*

## Tips For Travelling the Cleetwood Cove Trail

Visitors wishing to reach the lakeshore of Crater Lake will need to hike the Cleetwood Cove trail. Located on the north side of Crater Lake, it is the **only** safe and legal access to the lake. The trail is one mile in length (one-way) and drops 700 feet as you descend from the East Rim Drive trailhead to the lakeshore. On your return trip, this is comparable to climbing 65 flights of stairs! The Cleetwood Cove hiking trail is recommended only for those in good physical condition and should not be attempted by visitors with heart, breathing, or leg problems. It is not accessible for visitors with mobility impairments. Hikers are advised to wear closed toe shoes and bring plenty of water, sunscreen, and mosquito repellent. Toilets are available at both the trailhead and the boat dock area. Due to the park's heavy snow conditions, the trail typically does not open until late June and closes in mid-October.

## CRATER LAKE HIKING GUIDE

Destination/Trail Name	Distance	Difficulty	Trail Highlights
Sun Notch Viewpoint	1/2 mile round trip	Short stroll Allow 30 minutes	Overlook of Crater Lake and Phantom Ship
Castle Crest Wildflower Garden	1/2 mile loop trail	Short stroll Allow 30 minutes	Beautiful brook; Display of wildflowers July - August
Godfrey Glen	1 mile loop trail	Gentle level hike Allow 45 minutes	Overlook of Annie Creek Canyon; Old growth forest
Watchman Peak	1.4 miles round trip	Moderate climb; 500 ft. elev. gain Allow 1 hour	Historic fire tower; Overlook of Wizard Island
Cleetwood Cove	2.2 miles round trip	Strenuous climb; 700 ft. elev. gain Allow 2 hours; See article above	Only access to lakeshore; Swimming and Fishing
Annie Creek Canyon	1.7 mile loop trail	Moderate climb out of canyon Allow 1 1/2 hours	Deep stream cut canyon; Wildflower and wildlife sightings
Garfield Peak	3.4 miles round trip	Strenuous; 1,000 ft. elev. gain Allow 2 to 3 hours	Panoramic views; Overlook of Phantom Ship
Mt. Scott	5 miles round trip	Strenuous; 1,500 ft. elev. gain Allow 3 hours	Highest peak in park, Outstanding views; Historic fire tower



# WILDFLOWER WATCH

## A Late Bloomer...

As the heavy winter snows finally retreat from the slopes of Mt. Mazama, visitors will be greeted by a beautiful display of wildflowers throughout the park. The parade of color is led in mid-June by the bright pink Spreading Phlox and the white Pasque Flower found along the park roadways. From mid-July through late August, our whole mountain is in bloom with a wide variety of alpine meadow flowers. The open slopes of the Garfield Peak trail, the streambanks of the Annie Creek Canyon trail, and the small brook of the Castle Crest Wildflower Garden are all traditional "hotspots" for viewing park wildflowers. Check at either park visitor center for a current list of flowers in bloom and their locations. The park visitor centers also offer several flower identification books available for purchase through the Crater Lake Natural History Association to assist with your flower finding.

Illustrations by Amelia Bruno



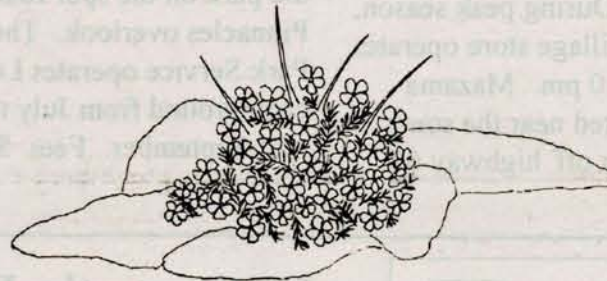
Lupine



Sitka Columbine



Pacific Bleeding Heart



Spreading Phlox



Elephant Head Pedicularis

## Mt. Mazama Collomia - Research on a Rare Flower

By Mac Brock, Chief of Resource Preservation and Research

The Mt. Mazama collomia is one of the most beautiful wildflowers of the Crater Lake region, but it is also one of the rarest jewels in the wealth of biodiversity contained in Crater Lake National Park. Concerns over vulnerability and longterm viability of collomia prompted the National Park Service and the U.S. Forest Service to join in a cooperative effort with scientists from the University of Idaho to gain information on the ecology of the species. Last summer, scientists worked with volunteers to locate populations and track the plant's population trends and reproductive success.

As a result of our studies, we have discovered new populations of collomia and insights into its habitat requirements. We also found that populations of collomia in Crater Lake National Park are genetically different from populations outside of the park. This means that plants found in the park contain valuable and unique genetic resources not found in other portions of its range. This information gives park management the tools it needs to monitor and perhaps restore this rare plant to ensure that future generations have the opportunity to enjoy this splendid natural wonder.

The research was supported by a generous grant from Canon U.S.A. through the "Expedition Into Parks" program of the National Park Foundation. The National Park Foundation is the official nonprofit partner of the National Park Service. Dedicated to helping meet the needs of the country's 367 National Park Service units, the Foundation was chartered by Congress in 1967 to channel private resources into the parks. The foundation awards \$2 million in grants each year to support education, visitor services, and volunteer activities to preserve and enhance the parks.



# VISITOR SERVICES

## Emergencies

To report medical, police, or fire emergencies, **DIAL 911**, 24 hours-a-day. First aid stations are located inside either park visitor center.

## Lost and Found

If you lose an item while visiting the park, contact a park ranger at either visitor center or call the park dispatch office (541)594-2211 Ext. 347 to report your loss. Found items may be returned to either park visitor center.

## Postal Services

A U.S. Post Office is located in the foyer of the Steel Information Center. During the summer, it is open Monday through Friday, 10:00 am to 4:00 pm and on Saturdays 10:00 am to 2:00 pm.

## Rim Village

A cafeteria, gift shop, and full service restaurant is available for visitors inside the Rim Village cafeteria and gift shop building. Hours of operation extend from 8 am to 10 pm during peak season. In addition, a formal dining room is located inside the Crater Lake Lodge. Rim Village is located on the south rim of Crater Lake.

## Mazama Village

A 200 site campground, the Mazama Motor Inn, a camper services store, laundry, showers, and gasoline are all available at this location. During peak season, the Mazama Village store operates from 7 am to 10 pm. Mazama Village is located near the south entrance station off highway 62.

## Camping

There are two campgrounds inside Crater Lake National Park: **Mazama Campground** contains 200 sites. It is operated by the park's concessioner from early June through mid-October. It is not on a reservation system, but generally there are plenty of sites available. The campground offers running water, fire rings, picnic tables, and flush toilets. Wheelchair accessible sites are available.

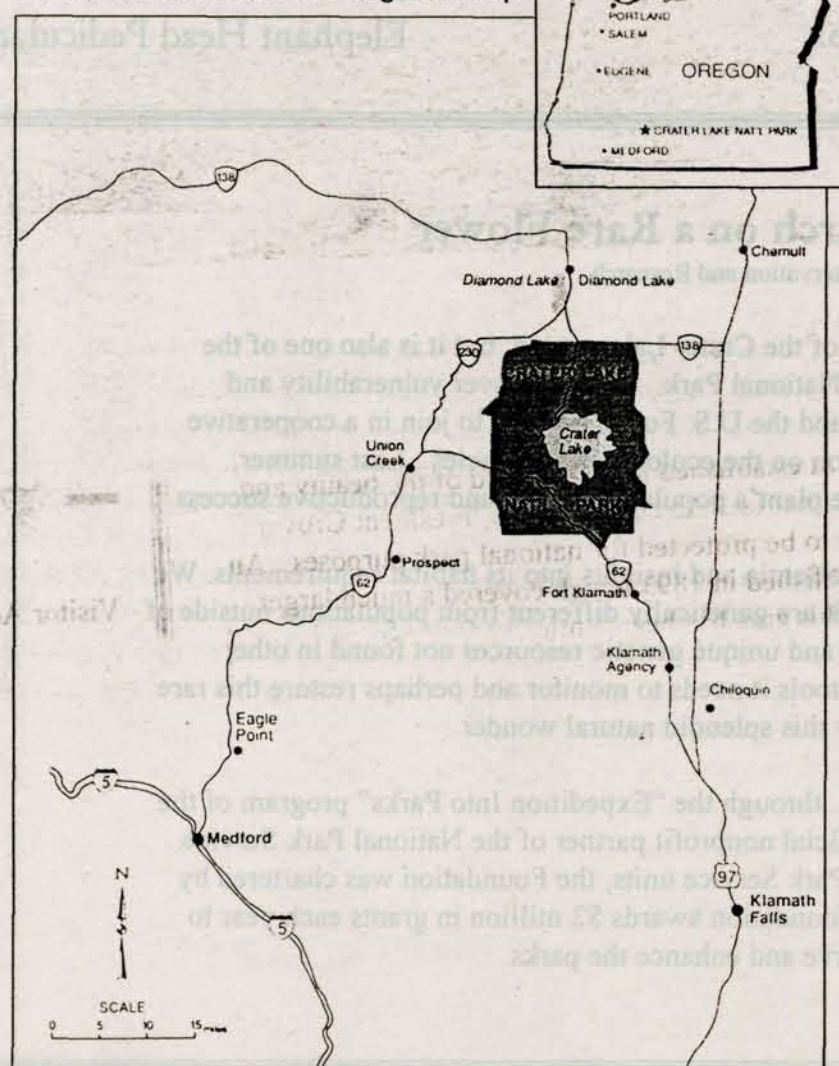
Fees: \$11/tent site, \$12/RV site. **Lost Creek Campground** contains 16 sites for tent camping only. It is located in the southeast corner of the park on the spur road to the Pinnacles overlook. The National Park Service operates Lost Creek campground from July through mid-September. Fees: \$10/site.

## Lodging

Inside the park, there are two facilities for overnight accommodations:

The 71 room **Crater Lake Lodge** overlooking the lake is located at Rim Village. It will be open for the summer season May 18 through Oct. 19, 1996. Reservations are highly recommended well in advance. The 40 unit **Mazama Village Motor Inn** is located seven miles south of the lake in the Mazama Village complex. It too will be open for summer guests from May 18 through Oct. 19, 1996. To make reservations for either of these accommodations, contact the Crater Lake Lodge, Inc (541) 830-8700 or by writing Crater Lake Lodge, Inc; P.O. Box 128, Crater Lake, OR 97604.

Crater Lake National Park Regional Map



## Getting to the Park

During the summer, Crater Lake National Park may be entered either from the north via Highway 138 or from the south via Highway 62. Spring and Fall travellers need to note that during an average snowfall year, the north entrance to the park opens for the season in mid-June and may close in early October when the next winter's snowfall begins.

## Travelling Crater Lake's Rim Drive

Inside the park, the 33 mile Rim Drive circles the lake. There are more than 30 overlooks located along this scenic two lane road. On average, allow two hours to travel completely around Crater Lake. There is one spur road departing from the Rim Drive on the east side of the lake. This seven mile road provides access to the Pinnacles Overlook and Lost Creek Campground. While enjoying the spectacular views found along Rim Drive, be on the lookout for deer and other wildlife crossing the road. Also be aware that icy road conditions may be present at any time of the year. Please obey the posted speed limits at all times.

## Driving Distances in Summer:

Medford	80 miles
Klamath Falls	60 miles
Bend	105 miles
Eugene	140 miles
Portland	250 miles
Seattle	425 miles
San Francisco	450 miles

