

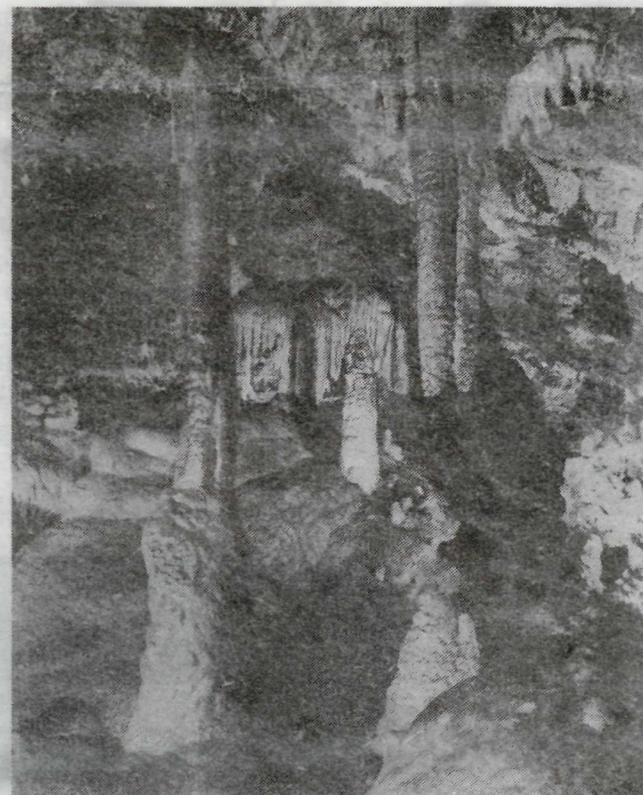
OREGON CAVES UNDERWORLD

OREGON CAVES NATIONAL MONUMENT



CRATER LAKE NATURAL HISTORY ASSOCIATION

VOLUME 2, SUMMER 1987



Welcome To Oregon Caves National Monument

Welcome to Oregon Caves National Monument, one of the Northwest's most outstanding underground wonders.

In addition to the acclaimed "Marble Halls of Oregon," you'll also find here a scenic remnant of the old-growth forest that once blanketed much of the region, cascading waterfalls, mountain streams, wildlife, wildflowers, and plenty of outdoor recreational opportunities.

What is there to do at Oregon Caves National Monument? Of course, we highly recommend the exciting and informative cave tours, offered by the park concessioner. (Please note the tour is moderately strenuous and involves considerable stair-climbing and stooping in some low passages).

But the 48-acre National Monument also includes 5 miles of trails which

provide access to many more miles of hiking in the surrounding Siskiyou National Forest. Several of our trails are highlighted in the "Things To Do" section of this issue of the UNDERWORLD. For a map and further information, stop by the Information Booth along the entrance road. Uniformed park rangers are also on hand - feel free to ask them for information, directions, or assistance.

You'll have plenty of opportunity for observing wildlife, especially in the early morning or late afternoon. Stellar's jays, golden-mantled ground squirrels, and Townsend's chipmunks are fun to watch, and are plentiful around the main public use area. (Please don't feed the wildlife - it's not good for them, and may be hazardous to you!)

Elsewhere in the park you may en-

counter black-tailed deer, coyotes, raccoons, snowshoe hares, porcupines - in all, 45 species of mammals. Numerous birds can be seen and heard along the trails, including three species of woodpeckers, eight species of warblers, the Swainson's thrush, mountain bluebird, western tanager, ruffed and blue grouse, red-tailed hawk, raven, and even the rare spotted owl puts in an occasional appearance.

The Siskiyou Mountains are also home to an abundance of flora. Here the mixed evergreen forest dominated by the towering Douglas firs is joined by broadleaf evergreens such as madrone and tan oak characteristic of the California woodlands. Rhododendron provides a spectacular floral display in spring, and wildflowers abound through the summer and fall.

Checklists of the birds, mammals, and plants of Oregon Caves National Monument are available at the Information Booth, along with other publications to help in identification. Other books relate the history of the "Marble Halls of Oregon," early settlement and pioneer activities in the region, and Native American history and culture. A bit of history is on display - the Oregon Caves Chateau, recently named as a National Historic Landmark.

So whether you are looking for an underground adventure, a challenging hike, an easy stroll, or a cool seat by a waterfall - Oregon Caves has all this, and more. Enjoy your stay, and help us to ensure that future generations can do the same: take only photos, and leave only footprints.

— Special Feature —

Meeting The Challenges

Resource Management At Oregon Caves

They Work By Night...

In this year of the Constitution's Bicentennial we are reminded of the high expectations Americans characteristically place on themselves and their institutions. As one example, the National Park Service is charged with the responsibility for managing many of our nation's outstanding natural and cultural resources. Legislation set the challenge: to conserve these unique elements of our heritage, while at the same time providing for their enjoyment by the people, and leaving them unimpaired for future generations.

That is not an easy task when you consider the tremendous increase in visitation since the first national parks and monuments were created over a century ago. Or when you realize that even our largest and most rugged parks and wilderness areas are rapidly becoming islands of wildness in a sea of man-modified environments. Or when we learn to our dismay how even apparently minor and remote changes in the larger environment can have an impact on our wildlife, landscapes, and artifacts.

Here at Oregon Caves, important progress is being made to deal effectively with a variety of management challenges. The accompanying articles provide park visitors not only with a progress report, but also with explanations of management activities they may see underway in the park, and with insights into the philosophy behind the action.



Moss growing by lights in the cave. Plants can stain and erode cave formations. Photo by National Park Service.

A Remedy for "The Green Sickness"

Postcards of Oregon Caves frequently show green-tinted speleothems (cave formations) along with the more common shades of white, grey, and brown. Colorful as this may be, they are also symptomatic of "la maladie verte" - the green sickness.

Show caves which have been electrically lighted and open to the public for many years are most likely to suffer from the green sickness: the growth of exotic algae, mosses, and other plants on surfaces within a cave. Lascaux Cave in France, site of the world-famous prehistoric cave paintings, has been closed to visitation because of a prolific growth of algae that was threatening to destroy the Cro-Magnon art gallery.

More than just an eyesore, green plants are alien to the cave environment, and can seriously damage speleothems. According to Tom Aley, Director of the Ozark Underground Laboratory and cave management consultant

to the National Park Service, "If the growth is allowed to persist, speleothem surfaces are etched and dissolved by plant growth, and in places, the surfaces of speleothems are turned to a jello-like substrate by algal attack."

How do plants get hundreds of feet underground in the first place, often long distances from the nearest opening to the outside? Caves are most easily invaded by algae, mosses, and ferns. These plants reproduce by means of spores, tiny particles which are produced in great numbers, and which are carried easily in the air. Spores may be drawn into caves by the natural flow of air, and they may be carried in by animals — or by people. Once inside, the artificial lighting necessary for public visitation, typically moist conditions, and a substrate fertilized by detergent-bearing lint from visitors' clothing, can together provide a hospitable environment for plant

Each evening as the last tour group of the day exits the cave, men in rugged work clothes file in by another entrance. Electric lights mounted on their hard-hats light the way in the darkness. For these National Park Service employees, their work is just beginning . . .

In last summer's issue, we reported on the extraordinary progress made in carrying out the first phase of a multi-year cave restoration and tour route improvement project. Tons of rubble have been laboriously removed in an effort to restore the cave to a more natural condition.

In the 1920's and 1930's, many tons of rubble were created by the blasting of tunnels and other improvements of the cave tour route. Instead of carrying the rubble out of the cave, early workers stashed the rocks and mud in side passages, covering or blocking off many beautiful formations and passageways.

Working in the cold, damp, and cramped cave environment, the rubble removal crew has been concentrating on the first third of the cave tour route, where most of the rubble was deposited. Loading the debris into 5 gallon buckets, the workers carry or wheel the buckets out of the cave with handcarts and small wagons.

The original estimate of 80 cubic yards of rubble to be removed was exceeded long ago. The total amount of material removed from the cave now amounts to 892 tons, the equivalent of 24,326 bucket loads! Much work still remains, but even now, returning visitors will notice significant changes in the appearance of the cave.

In the process of removing the rubble that had blocked passages for over 50 years, workers rediscovered over 500 feet of forgotten passageways and cave formations. Now, Watson's Grotto has been cleared of debris. Visitors can see River Styx much as Elijah Davidson first saw it: crystal clear water cascading over white marble. Previously, the stream had been confined to a culvert, and the creek bed was filled with rubble.

Once the debris has been cleared from the remainder of the tour route, the next phase of the cave restoration project will begin. The existing asphalt walkway, installed in the 1930's, is staining the passageway and adjacent formations. To correct this problem, the asphalt will be torn up and removed. In the future, visitors will tread a concrete walkway that is less damaging to the fragile cave environment.



Workers fill buckets with rubble from a blocked passageway. Photo by Chas. Davis.

growth.

What can be done? Based on careful research done here and at caves around the U.S., park managers have adopted a plan to control exotic plant growth in Oregon Caves. First, a new low-wattage lighting system will be installed as the new concrete walkway is put into place. The new system will provide about the same level of illumination with less output of light useful to plant growth. By carefully controlling the location, duration, and intensity of cave lighting, exotic plant growth can be substantially reduced.

The 5.25 Percent Solution. Any plants that survive will be controlled by hand spraying with a solution of plain old household bleach. Tests have demonstrated that bleach is much more effective at eliminating cave plants than herbicides, germicidal lights, or other control agents. Furthermore, experience at other caves indicates that bleach has

little, if any, effect on cave formations.

The spraying of these alien invaders is carried out by National Park Service employees at night when the cave is closed. Although occasionally a visitor might notice a faint chlorine odor, much like that encountered around a swimming pool, most of the vapors are quickly dispersed and flushed out of the cave by the continual circulation of air through the cave.

Results have been highly encouraging. Park resource management specialist Larry Cosby reports that since the control project began, the green sickness in Oregon Caves has been dramatically reduced.

Monitoring of the water in Cave Creek indicates that there has been no detectable change in water quality or characteristics since the spraying was started.

And Now . . . Clay Worms?

Yet another cave feature now appears to be an unnatural consequence of human activity. In some parts of the cave, the walls and ceiling bear a scattering of worm-like sinuous brown deposits. Generally an inch or so in length, these "clay worms" appear to be composed mostly of clay and quartz particles, often bound up with lint and algae.

Cave management expert Tom Aley suggests that three factors may be involved in the formation of the mysterious clay worms. First, the construction

of new entrances, tunnels, and excavations have increased the movement of air carrying dust, pollen, and other contaminants into the cave. Second, visitors introduce lint, hair, and other materials that provide a substrate and nutrients for plant growth in the cave. Finally, cave lighting may stimulate plant growth on the clay worms, contributing to their development or enlargement.

What can, or should, be done about the clay worms? Stay tuned . . . we're still working on it.



Sinuous brown streaks known as "clay worms" appear on a drapery formation. Photo by Mike Sims.

I.P.M. versus The Alien Invaders

As in the case of the green sickness, it is not always possible to maintain a "hands-off" policy when it comes to plant or animal pests in the National Parks. These are species which have been found to endanger public health and safety, or which threaten substantial damage to park resources.

Often, though not always, park pests are introduced exotic species: aggressive alien invaders which displace more desirable native species. Here at Oregon Caves, of course the number one pest problem is the green sickness. Surprisingly, the next biggest pest problem for park managers is wasps. Due to the availability of soda pop and other sweet drinks and foods, the potential exists for a hazardous infestation of sugar-loving wasps.

A more subtle threat to the park is the invasion of certain exotic plants such as the yellow-flowered Klamath Weed (*Hypericum perforatum*), and the tenacious Evergreen Blackberry (*Rubus laciniatus*). Both plants are of European origin, having "hitchhiked" halfway

across the globe to invade the Pacific Northwest. Both are aggressive, displace native species, and are hard to eradicate.

To cope with such problems, the National Park Service has adopted an approach called Integrated Pest Management (I.P.M.) The principle behind I.P.M. is to apply the least drastic methods that will reduce a pest infestation to tolerable levels. Toxic chemicals are to be used only when there is danger of serious damage to the resource (e.g. cave formations, forest trees), or risk to public health. The object of I.P.M. is to act early in order to prevent a problem from becoming severe later on.

Starting an I.P.M. program at Oregon Caves has involved detailed planning. According to park resource management specialist Larry Cosby, "I.P.M. is a thinking process: first we precisely identify the problem species, then we thoroughly research its habits and life cycle. At this point, we can generally propose several alternative control methods."

The final control plan for a pest often employs more than one method for a more effective attack. For example, in combatting the green sickness, changes in cave lighting are accompanied by periodic spot application of a bleach solution to troublesome plants.

How will the wasps and weeds be controlled? For the wasps, an ounce of prevention is worth a pound of cure . . . Lids and straws will be provided for sweet drinks sold by the concessioner. Park visitors can help by using the lids, and by making sure that cups, food scraps, and other wasp-attracting goodies are properly disposed of in refuse cans. Further reduction in the wasp population will be achieved by the use of traps baited with hormone attractants — irresistible only to wasps!

Klamath Weed and Evergreen Blackberry present a "thornier" problem. Any disturbance to the soil encourages invasion by these - and other - weedy species. Disturbance can be the consequence of necessary human activity, like the construction and repair of

buildings, walkways, and parking areas. Or it can be the result of accidental or careless damage such as "cutting corners" along the trails, or uprooting vegetation.

Disturbance is also an important process in nature. A fallen tree opens up a space in the forest suitable for invasion by numerous colonizing species not found in the mature forest. Some forms of wildlife, such as deer and grouse, benefit directly from the abundance of food plants in these naturally occurring forest openings.

But trouble occurs when exotic weeds displace the native species to which the other organisms in the ecosystem have become adapted. The delicately balanced system can become unbalanced. This is why you may see Park employees or supervised volunteers actually digging up "wildflowers" along some of our roads and pathways. Fortunately, the weedy invaders are mostly restricted to the main public use areas of the park. With I.P.M. - and a bit of elbow grease - we intend to keep it that way.

Oregon Caves Chateau Named National Historical Landmark

This spring, the picturesque Oregon Caves Chateau was officially designated as a National Historic Landmark. Through this action by Secretary of the Interior Donald Hodel, the Chateau joins the distinguished list of structures recognized to be of national historic significance.

Many of the National Historic Landmarks are familiar features to visitors of our National Parks. Well-known examples include the Old Faithful Inn at Yellowstone, Paradise Inn at Mt. Rainier, Grand Canyon Lodge, and The Ahwahnee at Yosemite.

The Oregon Caves Chateau is owned and operated by Canteen Company of Oregon, concessioner at Oregon Caves National Monument. A certificate attesting to the historic significance of the building will be presented to the Canteen Company. In the future, visitors will see a special plaque commemorating the event on display at the Chateau.

Designed by architect G.A. Lium and

completed in 1934, the rustic six-story lodge straddles a narrow wooded ravine on the flanks of Mt. Elijah close by the cave entrance. Housed within are a 24-room hotel, dining room and kitchens, a 1930's vintage soda fountain style coffee shop, and employees' quarters.

Despite its size, the Chateau blends in well with its sylvan setting. The weathered cedar shingles and siding reproduce the rugged textures and earthy colors of the surrounding forest. Built into the mountainside, the lodge curves to hug the contour of the slope.

Entered at ground level from the roadway, the spacious lobby actually occupies the fourth floor, as a glance out the large picture windows will confirm. A massive double fireplace made of marble forms the centerpiece. The room is framed with enormous exposed wooden beams supported by 30-inch diameter log posts.

Much of the charm of the structure

derives from the use of local materials throughout. The main timbers were cut and milled nearby, as was the cedar used for the shingles and siding. Marble for the fireplace was blasted from adjacent bedrock in the course of construction. Native oak, madrone, pine and fir add beauty to the striking open staircase in the lobby.

Large plate glass windows draw the eye toward the outdoors, where waterfalls cascade down from the cave entrance into mirror-like pools with rainbow trout swimming in the frigid water. Some of the stream's flow is channeled

right through the dining room. The pools, waterfalls and the stonework that grace the landscape are the handiwork of Civilian Conservation Corps (CCC) workers during the 1930's.

So, even if you were not planning to stay at the Chateau (you may change your mind!), at least venture into the lobby and have a look around. Let your imagination take you momentarily back to another time — when gleaming roadsters with rumble seats brought adventurous vacationers and newlyweds to the door of the Oregon Caves Chateau



The Oregon Caves Chateau, completed in 1934, is an outstanding example of rustic architecture. Photo by National Park Service.

Things To Do

Cave Tours

Summer (June 14 - Sept. 6): 8 a.m. - 7 p.m.

Fall (Sept. 7 - Sept. 30): 9 a.m. - 5 p.m.

Winter (Oct. 1 - April 30): tours at 10:30 a.m., 12:30 p.m., 2 p.m., 3:30 p.m.

Spring (May 1 - June 13): 9 a.m. - 5 p.m.

Note: All facilities closed December 25th.

Tour rate: Adults (age 12 and over) \$5.25. Children \$3.00. Child care \$3.00. Children under age 6 not permitted in cave.

National Park Service Interpretive Programs

Programs on the natural and historical features of the park are presented each evening at the Chateau, and also Friday through Sunday evenings at Greyback (U.S. Forest Service) Campground on the Caves Highway.

Topics and times may vary; consult the schedules posted at the Chateau lobby and at Greyback Campground for current information.

Our interpretive programs are designed to give visitors of all ages a better understanding and appreciation of the park's features. Everyone is invited to participate - there is no charge.

Trails

Cliff Nature Trail: 3/4 mile loop (1 hour), access from Exit Trail near the cave exit, or from the archway at the Chalet. Cliffs, marble outcrops, views of Siskiyou Mountains, old-growth forest.

No Name Trail: 1.1 mile loop (1 hour), access from far end of upper parking lot, or from the lower end of the lower parking lot. Shady ravine, mountain streams.

Big Tree Trail: 3.4 mile loop (3 hour), access from the archway at Chalet. Giant Douglas fir tree, old-growth forest, mountain meadows.

Additional trails to Mt. Elijah, Bigelow Lakes, Lake Mountain, Cave Creek Campground - see map in park brochure.

Oregon Caves Underworld

OREGON CAVES UNDERWORLD is issued once annually. Single copies may be requested by writing to: OREGON CAVES UNDERWORLD, Oregon Caves National Monument, 19000 Caves Highway, Cave Junction, OR 97523. Comments and other correspondence should be directed to the same address.

Reproduction of all or part of the material in this publication is prohibited without the prior consent of Oregon Caves National Monument and its UNDERWORLD contributors.

Principal writer and editor for this issue of the UNDERWORLD: John J. Parker, Ranger, Oregon Caves National Monument.

OREGON CAVES UNDERWORLD is a publication of the Crater Lake Natural History Association, a non-profit, educational organization dedicated to the interpretation of the natural and human history of Crater Lake National Park, Oregon Caves National Monument, and the National Park Service.



In 1917, just getting to Oregon Caves was an adventure. Photo by National Park Service.

For Your Safety

Pets —

Pets frighten wildlife and disturb others. Pets are not permitted in the cave, on trails or within buildings and must be kept attended and on a leash while outside of the vehicle or car.

Animal Bites —

Feeding wild animals is illegal and is also an invitation to be bitten. Rodents are potential sources of several diseases that can be transmitted to pets and humans. Avoid close contact with rodents and their burrows.

The Cave Tour is Not Recommended for Anyone with Breathing or Climbing Difficulty. You will walk through 1/2 mile of passageways, climbing a vertical

distance of 218 feet. Some of the passageways are low and narrow. There are several steep steel and stone stairways to negotiate, consisting of 195 stair steps down and 345 steps up, as well as a 470 foot exit tunnel at a 16% grade (1 foot up in 6 feet forward). The average time for the Cave Tour is one hour fifteen minutes inside. The exit trail back to your starting point is 3/10ths of a mile long, steep in places. **BE CAREFUL!**

Due to the Difficulty of the Tour, Children Under Six Years of Age Are Not Permitted in The Cave. A child-care service is available at the concession for your convenience.

Smoking, Food and Beverage Items are Prohibited in The Cave.

Canes, Rods, Staffs, or Crutches Are Not Permitted Within The Cave as these items might be used to mar the formations. Flashlights are also prohibited.

Stay With Your Guide. If you become short of breath or are having any other difficulty, inform the Guide and he will adjust the pace. There is an emergency exit about 1/3 of the way through the Cave for those who do not wish to continue.

Enjoy and Preserve

Oregon Caves National Monument is a Natural Area of The National Park Service. Regulations prohibit the feeding or molesting of any of the wildlife in the Monument. Trees, flowers, shrubs, rocks, formations and all other natural features are to be left unaltered for other visitors to enjoy.

The Cave Formations Are Very Fragile and Are Stained by the Oils of the Hands and Lint from Clothing. Please **Do Not Touch or Lean Against Any of the Cave Walls or Formations!**

You can help preserve this beautiful park by visits with a "minimum impact" attitude. Please stay on trails, do not short cut.