



Volunteer Times

Published for the volunteers of the UCI Arboretum

November 2009

Wonders of the Earth: Crystal Cave, Sequoia National Park

By Laura Lyons, Nursery Manager, UCI Arboretum

In previous issues (see *Volunteer Times* August and September 2009), we explored the spires, granite domes, and waterfalls of the twin national parks, Kings Canyon and Sequoia, along with the magnificent *Sequoiadendron giganteum* (*Sequoia gigantea*), giant sequoia, of the Grant Grove and Giant Forest. There is another wonder to be found in the park, Crystal Cave, and it is aptly named.

A wide variety of rocks were jammed onto California during the 30-million-year period the Farallon Plate was subducting under the North American Plate. Rocks formed on an ocean bottom are now found thousands of feet in the air; overlying the rocks of the Sierra Nevada batholith. I have pointed out that limestone is of marine origin and, during this period the intense pres-



A pool inside Crystal Cave.

ures and volcanism that formed the granites of the Sierra also metamorphosized some of the limestone into marble. Later the entire area was uplifted and became the Sierra Nevada, in which are the extensive limestone and marble beds in Sequoia National Park. These beds and rocks are examples of the remarkable geology of California.

In addition to the magnificent trees and rock formations, there are over two hundred caves within the park boundaries and most are over a mile long. While other caves in the park may be available to spelunkers, speleologists, and researchers; only Crystal Cave is available to the general public.

Crystal Cave is active in that a stream flows through it all or most of the year. Most of the water seeps in from Yucca Creek, which flows above and to the west of the cave, and drips and seeps into a stream in the cave that eventually discharges into Cascade Creek. (The ever-dripping water apparently motivated our guide to caution us to avoid the drips unless we wanted a stalagmite to grow on our heads.)

Although Crystal Cave is a solution cave, it is not a karst cave, because it is not in a karst formation. Caves such as Mammoth Cave are in karst formations and were formed by the percolation of acid-carrying water through

See Crystal Cave, on Page 2



Claytonia perfoliata (miner's lettuce) along the trail to Crystal Cave.

Short Takes from the UCI Arboretum

By Laura Lyons, Nursery Manager, UCI Arboretum

As the year winds down there are a lot of tidbits of information I have to share with you, so it's time for a pre-holiday appetizer buffet—in other words, another *Short Takes* article.

Natives Group Busy Transplanting

Sometimes we're too successful for our own good, or rather, the plants are. In particular this year, it's *Artemesia californica*, Coastal Sage Scrub. Not too surprising given it's native to Orange County, in several areas of the Arboretum we have too much of it. So, we're going to use our success by replacing our ever thirsty lawns (that we've let die) with the water sipping Coastal Sage and other native plants. If you'll help transplant our proficient *Artemesia*, come join the California Garden Group on Thursdays from 10 a.m. to 1 p.m.



Arboretum Closed on Mondays

This closure will go into effect November 1.

We're going into the quiet season of the year as winter approaches. Plus, thanks to the budget situation, UCI has implemented multiple-hiring freezes that impact even the hiring of students. Therefore, we have decided to save money for the busy spring season by closing the Arboretum on Mondays for the immediate future. We'll concentrate our efforts and staff on the other five days of our work week.



Since no volunteer groups meet on Monday, the affect on you volunteers should be minimal, if at all. Regardless, I wished to keep you informed.

Upcoming Closures at the Arboretum

November 11—Closed in honor of Veterans Day.

November 14—Closed for an emergency drill on North Campus.

November 24-28—Closed for Thanksgiving.

December 21-January 2—Closed for Winter Break—our gardens will be closed to the public, but volunteers are needed to help with watering. Next month, I'll be recruiting volunteers to assist with that task.

[FYI: This year UCI extended its Winter Break and has required staff to use furlough days (days without pay) to cover the six working days not covered as holiday pay.]

January Plant Sale

January 23 is the tentative date for our first plant sale of 2010. Look for more information on this sale and the full schedule for the first half of 2010 in the January *Volunteer Times*.

No Volunteer Times in December

This is the last edition of the *Volunteer Times* for 2009. My thanks once again to Tom McCranie, who acts as editor and layout person for the *Volunteer Times*. He takes my scribblings and turns them into the completed newsletters you enjoy. I don't know what I'd do without him.

In fact, I don't know what I'd do without any of you wonderful volunteers. You are keeping the Arboretum afloat through the rough seas we find ourselves in. When my colleagues ask how "I" manage to do so much, I tell them it is not "I" that does so much. It is "we." It is you, our volunteers, who keep this garden green and growing. I just make sure the bills are paid and the supplies on hand. You do the rest. Thank you,

***Happy Holidays, Merry Christmas,
and Happy New Year.***

Crystal Cave

Crystal Cave, from Page 1

limestone. Similarly, Crystal Cave was formed in a marble bed.

[Nature often uses weak solutions of carbonic acid and sometimes sulfuric acid for cave-building. The carbonic acid forms when water dissolves carbon dioxide,

See Wildflowers, on Page 3



The marble bed containing Crystal Cave as seen from across Cascade Canyon.

Wildflowers



Dicentra formosa, Pacific bleeding heart, with close up of blooms, near the Crystal Cave entrance.

Wildflowers, from Page 2

often from the atmosphere, and is a factor, for example, in building the stalactites hanging from a cave's ceiling. The sulfuric acid forms when the water dissolves hydrogen sulfide available from anaerobically (without oxygen) decomposed organic materials, from volcanic activity, and from other natural phenomenon. It more actively dissolves limestone and marble.]

Because Crystal Cave is in marble, the resulting cave curtains, flowstone, rooms, stalagmites (floor), stalactites (ceiling), and other cave formations (speleotherms) have an extraordinary sparkle, especially when the formations are fresh.

The basic tour, which we took, is a loop trail about half a mile long and takes about an hour. (Caution: The floor is slippery in places, so choose your shoes accordingly.) Our guide pointed out beautiful formations and underground streams as we were led through a number of passages and modest-sized rooms. The largest room we saw was Marble Hall. It measures 175-foot long, 60-foot wide, and 30- to 40-foot high. Another room, called the Dome Room, was impressive not only for its namesake domelike ceiling, but for the formations inside it.

For you adventurous ones, there are two other tours, which are much longer and more physically challenging as they wind (and, for one of the tours, crawl) through other levels of Crystal Cave. None of the tours go through all of the estimated 10,000 feet of passages that have been explored in this marvelous cave. (Note: The term "level" refers to a phase of cave development.)

A narrow, winding road leads from Generals Highway to the parking lot for the cave tour. We then descended

a steep-half-mile trail to the public entrance to Crystal Cave, near the bottom of Cascade Canyon.

Along the trail, Cascade Creek and its falls are beautiful attractions. As I can attest, this walk is even more scenic when the wildflowers are in bloom. There were *Claytonia perfoliata* (miner's lettuce), *Heuchera micrantha* (alum root or crevice alumroot), two different *Lupinus* (lupine), and a myriad of other wildflowers beautifully blooming along the trail. I regret I did not identify more flowers. My faithful wildflower guide was at the lodge—I hadn't expected to see wildflowers on a cave tour!

The hike back to the parking lot is rather challenging due to the steepness of the trail, but along the way there were plenty of wildflowers to admire and photograph. (Stopping to take pictures allows one to rest, you know.)

Crystal Cave is operated by the Friends of Sequoia, officially known as the Sequoia Natural History Association. The cave is open for tours from May through September or October.



Cascade Creek along the trail to Crystal Cave

Photographs by Laura Lyons

Laura on Vacation Nov 10-14

I'll be taking some time off in after the November 7 plant sale, weather permitting—if we have hot and dry Santa Anas that week, I'll have to postpone my “staycation.”

The Herbarium Group, Nursery Group, and Friday Club are cancelled for the week following the sale. All other volunteer groups will meet as usual.

IMPORTANT DATES

NOVEMBER

<u>DATE</u>	<u>EVENT</u>
November 7	Fall Clearance Sale, 9 a.m. to 3. p.m.
November 11	Veterans Day - Closed
November 14	Emergency Drill - Closed
November 26 to 28	Thanksgiving - Closed

LOOKING AHEAD

<u>DATE</u>	<u>EVENT</u>
December 21 to January 2	UCI Winter Break - Closed
January 23	Saturday Plant Sale, 9 a.m to 3 p.m.

CURRENT VOLUNTEER SCHEDULE

<u>PROJECT</u>	<u>DAY AND TIME</u>
Nursery Group	Wednesday 9 a.m. – noon
Orchid Care Group	Wednesday 9 a.m. – noon
SA Bulb Garden	Wednesday 9 a.m. – noon
Perennial Garden	Thursday 9 a.m. – noon
California Garden	Thursday 10 a.m. – 2 p.m.
Herbarium Group	Thursday 1 p.m. – 4 p.m.
Friday Club	Friday 9 a.m. – noon
Special Events	See Cover

For information on any of these or for general information on volunteering, call Laura Lyons at: (949) 824-5833 or e-mail: ldlyons@uci.edu