An overview of public access lava caves in California

By John Brush
UIS Commission on Volcanic Caves

Introduction

If, like most ACKMA members, you have a passion for caves but are becoming a little jaded with the limestone variety, then perhaps you need a trip to California to visit a few lava caves (or tubes) which are easily accessible and open to the general public.

Literally thousands of lava caves are known in northern California. While a good many of them are on public land, access restrictions and/or paucity of location information make it difficult for the casual visitor or traveller to visit them. From a cave conservation perspective, this is not a bad thing. However, between 20 and 30 caves can be visited by the general public on a self-guided basis.

- These caves are signposted;
- Located close to vehicle parking areas;
- Have walking paths or trails to their entrances; and
- Have either walk-in entrances or infrastructure in place to facilitate easy access.

They also have passages that are relatively easy to negotiate. Two of the caves are in National Forests, which are managed by the US Department of Agriculture, and the rest are in the Lava Beds National Monument, which is managed by the National Park Service.

Marjorie Coggan and I were able to visit a good number of the public access caves in July 2018 while in California for the 18th International Symposium on Vulcanospeleology. The caves in the Lava Beds National Monument were the key focus of the symposium field trips. We also navigated our way to the caves in National Forests while en route to the Lava Beds area.

The following notes briefly cover how to find the caves and what are their features. I also offer some comments on management. The cave location information is based on distances and direction from the northern California city of Redding, which itself is about 350 kilometres (or 3-4 hours' drive) north of San Francisco.

Subway Cave, Lassen National Forest

Subway Cave is one of the easiest and most readily-accessible public access caves in California. It is in the Lassen National Forest about 100 kilometres (62 miles) east of Redding and is just off the Volcanic Legacy Scenic Byway (Highway 89). A signposted, sealed access road from the highway leads to a car park where there are several picnic tables, a toilet and a well-formed path to the entrance, which is just over 100 metres away. The carpark and picnic tables are in a shady grove of Ponderosa pines, as is a camping area a few hundred metres away on the other side of the highway. At the cave, however, the vegetation is more open and shrubby.

A permit is not required to visit the cave and there is no entry fee to the cave or the forest. The cave is open from May until November each year.

Concrete steps with steel handrails provide easy access into the cave. The passage is typically arch-shaped, 2-5 metres high and 2-6 metres wide and has a flat floor. There is very little breakdown. It is a very easy walk up the passage to another entrance about 400 metres away.

NOTE: All photos by John Brush

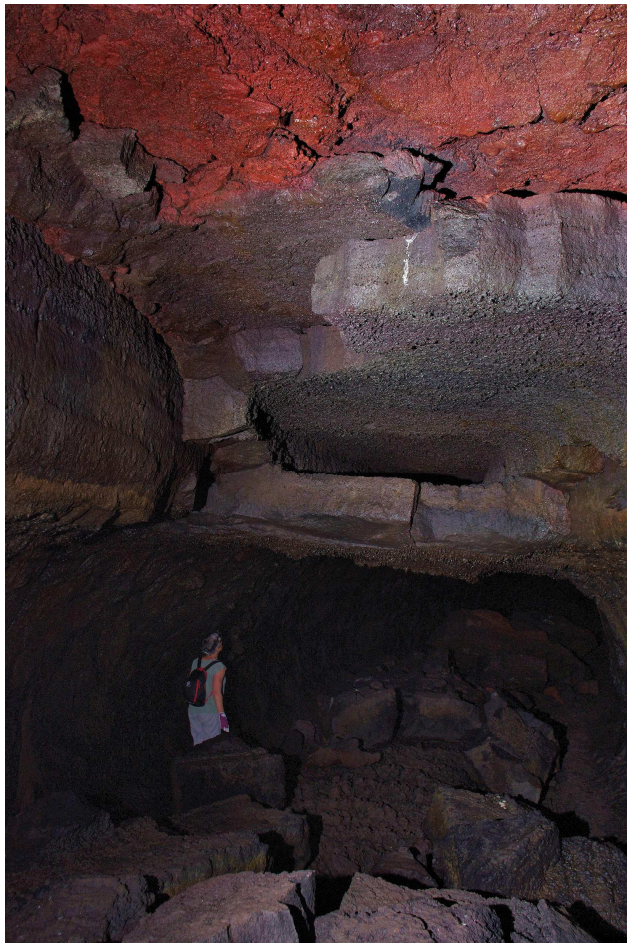
The flat floor in Subway Cave makes for easy walking. Note the camouflaged graffiti on the right hand wall.

As if the solid walls of the single passage were not obvious enough to lead visitors through the cave, there are reflective route markers at regular intervals. At the other entrance, there is another set of concrete steps and a return track to the car park, but on a hot day it is more pleasant walking back through the cave to the lower entrance. A torch is the only gear needed to explore the cave.

Much of the solid pahoehoe (ropey) lava floor has a thin covering of earth or sand. Some of this probably washed or blew in but it is likely a fair proportion of it was tracked in on the footwear of the many thousands of visitors who must have visited the cave over the years. At the time of our visit (and when we stopped in for a picnic lunch on our return trip south about a week later), the carpark was busy and there was a steady trickle of visitors to and from the cave.

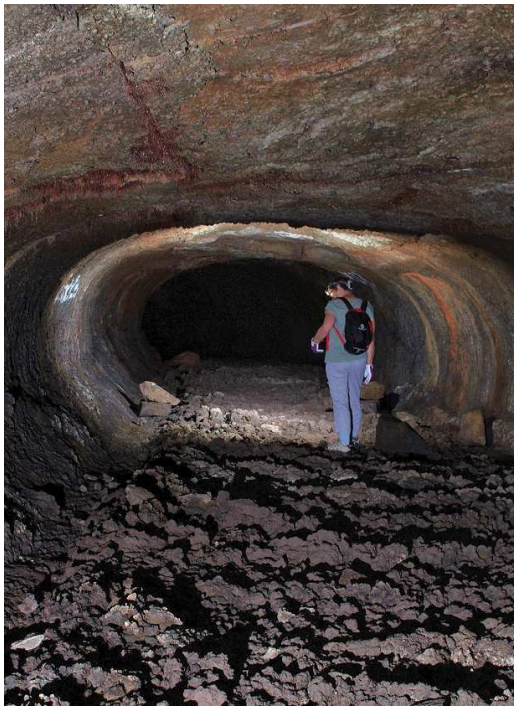
The section of cave between the two entrances would give first time visitors to a lava cave a fair impression of what a lava cave is like as it has a range of features in good condition. But is it not stunning. Another section of the cave down-flow from the entrance steps is more interesting - as it is in better condition; exhibits a wider range of features; is more colourful' and has little mud or sand.

To its credit, the Forest Service actively discourages visitors to this section. There is no mention of it in any interpretive signs or brochures and the passage would be easy to miss it unless you were specifically looking for it while going down the entrance steps.



The lesser known down-flow section of Subway Cave has spectacular colours and impressive features such as the tube-in-tube structure in the roof (above and below)

There is an obvious management presence at Subway Cave. The surface facilities are in good condition and are clean. There are interpretive signs at the car park and at several points in the cave. Although there were obvious signs of wear and tear, principally the erosional effects of foot traffic, the cave is in pretty good condition. There was virtually no rubbish and, at first, we thought there was an absence of graffiti. However, after we returned home, a close inspection of our photos revealed graffiti had been painted over in an attempt to discourage the practice and improve the appearance of the cave.



Welded clinker floor in down-flow section of Subway Cave.

Pluto's Cave, Klamath National Forest

Pluto's Cave is a spacious cave in desert country of the Klamath National Forest about 140 kilometres (87 miles) north of Redding. Getting there is a little more complicated than finding Subway Cave.

So, from Redding take the Interstate Highway (I-5) north to Weed, then follow Highway 97 (part of the Volcanic Heritage Scenic Byway route) for about 20 kilometres (about 12 miles) and turn left onto the A12 (also known as the 99-97 cut-off route). In about 4 kilometres (less than 3 miles), there is a sign to the Juniper Flat OHV (Off-Highway Vehicle) Recreation Area.

The track to Pluto's Cave

A kilometre (0.6 of a mile) further on, there is dirt track on the left. This is the access track to Pluto's Cave. If you look very carefully, you will see it is marked with metal letters nailed to a nearby telephone pole. However, chances are you will miss it, as we initially did. When you do locate it, follow the rough track for about 400 metres to a rudimentary car park. From there, it is a 400 metre walk to the cave along an unmarked (but obvious) foot track.

The cave is reputed to be about 1.5 kilometres long. A permit is not needed for a visit and there is no entry fee. The only gear required is a good light.

There are no facilities at the cave car park but the nearby Juniper Flat OHV area has picnic shelters, barbecues and a toilet. The picnic area was deserted at the time of our visit and it was a pleasant place for lunch - and had great views to snow-covered slopes of the 4300 metre Mt Shasta volcano. However, the area may not be as pleasant when there are trail bikes and quads screaming around the nearby OHV trails.

The foot track to the cave leads into the second of the cave's five collapse entrances (counting from the south). It is an easy scramble to the floor of the pit. Here, a left turn leads to a short bridge section of cave that has a steep rocky slope leading up to the small southern-most entrance. The passage is very dusty and has a very distinctive and unpleasant odour resulting, we were later told, from seasonal occupation by a particular species of bat. It is not a place to linger.

Continuing in the other (down-flow) direction from the second entrance, the route passes under another short bridge section; crosses a large vegetation-filled collapse pit; and enters a semi-dark section of cave. The passage is huge - generally 5-15 metres high and at least 10-15 metres wide. At first, it is easy walking over a sandy floor interspersed with breakdown areas.

About 200 metres in, there is a large skylight hole, which, at the right time of day, enables a shaft of sunlight to beam into the passage. The final and northern-most entrance hole is a little further on. Beyond that, the cave is dark. Very dark. The route is not always obvious as it meanders over, around and under huge breakdown blocks. Further in, there is less breakdown and parts of the original roof lining remain intact. As our time was limited, we did not carry on to the end of the cave.

The huge passage dimensions and the interesting play of light around the skylight holes are the cave's main features of interest. As it is relatively old, around 190,000 years, many of the passage features that are commonly seen in lava caves have been destroyed or obscured by breakdown.

A skylight entrance into Pluto's Cave.

The cave also looks very 'used' - with footprints everywhere and worn trails across the breakdown. There is a lot of painted graffiti throughout the cave. Some of it may be historic, but much of it looks to be quite recent and is mindless. There is also some littering.

The cave and its surrounds appear to have a less obvious and less effective management regime than there is at Subway Cave. A rudimentary sign at the carpark and the Forest Service Website have a little basic information about protecting the cave and what gear to take. However, there is not much evidence of an active management presence. Little effort appears to have been made to deal with the graffiti problems but we were later told that local cavers do a rubbish clean-up about once a year.

The cave may be worth a quick look if you are in the area and have some spare time. However, the time would be more profitably spent in caves at the Lava Beds National Monument, a couple of hours drive further north.

Caves in the Lava Beds National Monument

The Lava Beds National Monument lies in the far north of California, very close to the Oregon border. From Redding, it is a 240 kilometre (150 miles) drive that will take about 3 hours. From San Francisco, it nearly 600 kilometres (360 miles) - in effect a full day's drive.

The Lava Beds caves are relatively young, resulting from extensive and widespread volcanic activity 30,000 to 40,000 years ago. More than 800 caves have been recorded across the 190km2 area of the Monument. About 25 of them are usually open to the public. The public access caves are signposted; have paths or trails leading to them; and, where necessary, have steps, handrails and bridges to enable safe and easy access.

In several caves, the walking trails have been made easier by moving aside the breakdown. Much of this was done in the early days after the Monument was formally established in 1925. Only one cave, Mushpot, has electric lighting. It also has concrete paths and illuminated interpretive signs. In reality, it is a self-guiding show cave.

In addition to the caves and surface volcanic features, the National Monument includes several important historic sites. Most of them relate to the Modoc people and their ancient ancestors who inhabited the area for more than 10,000 years until being forced off their land after the first European settlers arrived in the 1850s. In the 1870s, there were wars with the US Army, culminating in a standoff in the rugged volcanic terrain where around 60 Modoc warriors and their families held more than 1000 troops at bay for more than six months. Unsurprisingly, it did not end well for the Modoc leaders.

The National Park Service charges an entry fee to the National Monument of $US20 per vehicle and this is valid for seven days.

Although the public access caves all have free access, regulations have recently been introduced to reduce the risk of White Nose Syndrome (WNS), which has not yet been detected in the Lava Beds area. WNS is a fungal disease that is having devastating effects on bat populations in many parts of the United States. All visitors intending to enter any cave in the area must now go through a screening process at the Monument Visitor Centre where they either certify they have no gear that has previously been used in other cave areas or have their gear decontaminated on the spot. Following that, staff will issue a dated permit card to hang on the rear-view mirror.

Staff will also suggest suitable caves to visit - noting that some caves may be temporarily closed when bats are present. They will also give advice on caving gear and even offer to "lend out a flashlight".

An informative brochure handed out at the Visitor Centre notes features of geological and historic interest and provides general information on lava cave formation. It also emphasises the importance of caving softly and safely and includes a map showing the locations of the public access caves. The map divides the caves in 3 categories: least challenging (essentially walk-through); more challenging (caves with stooping sections and rough floors); and most challenging (some crawling involved).

More than a dozen of the public access caves are accessed from the Caves Loop Road - a 3-kilometre one-way paved road that starts and finishes near the Visitor Centre. The road has parking areas at regular intervals. From these, signposts and footpaths direct visitors to the cave entrances. Walking distances are generally less than 100 metres. Caves that are temporarily closed are indicated by chains strung across the access paths and moveable self-supporting signs at the entrances.

Eight of the public access caves lie "beyond the loop", to use the local parlance. Several of these have their own access roads, most of which are sealed. Walking distances varies from as little as 30 metres (Valentine Cave) to about 1.5 kilometres (Symbol Bridge Cave).

With more than two dozen caves available, as well as a range of surface features and historic sites, it would be easy to spend at least a week in the area. During the vulcanospeleology symposium last July, five afternoons were devoted to field excursions to surface and underground locations (including to several restricted-access caves). In the time available, most participants felt they had barely scratched the surface.

It is beyond the scope of this article to describe each cave in detail. However, it is worth noting that most caves have at least a couple standout features, including:

Catacombs Cave, where there are welded clinker floors and spectacular secondary calcite and silica encrustations.

Golden Dome Cave, which is renowned for its abundant gold-coloured bacterial mats (commonly referred to as cave slime) on the walls and roof (**see right**) as well as a wide range of fresh-looking lava features and stranded boulders that were originally carried along in the lava stream.

It also has impressive lava cascades and rafted blocks (chunks of rock that were carried along in the lava stream).

Symbol Bridge and Big Painted Caves, both of which are short but very spacious and have ancient pictographs on the walls.

Mushpot Cave, which has electric lighting, interpretive signs and concrete pathways. It also has a presentation area with seating for around 30 people. This short cave is still worth a look as it has a good range of features, including sections of intact wall lining. It has the Mushpot, a small pit with a raised rim that formed when lava welled-up through the floor and subsequently receded.

Sentinel Cave, which has spacious passages, lava benches, skylight holes and several levels. A through trip is possible.

It has several ladders, bridges and handrails to improve visitor safety.

Breakdown has been moved aside to clear an easy walking route (**see right**). Note the large lava bench along the wall, marking a former level of lava in the passage.

In most of the public access caves, the added infrastructure and cave modifications to facilitate visitor access are not too intrusive. In fact, away from the entrance area, most of them look and feel like wild caves. However, several caves have also been more extensively modified, to protect either the cave or its visitors.

Skull Cave is a popular destination for visitors to the Lava Beds National Monument. It is a cave where quite a lot of infrastructure has been installed to facilitate access and protect its features.

This cave has a huge entrance passage with early European inscriptions on a wall. The lower level has permanent ice and Bighorn sheep bones.

It has a formed pathway leading to a long flight of steps to the lower level (**see upper right**) where there is a steel viewing platform above remnant permanent ice and an ugly steel barrier to stop visitors walking on and degrading the most extensive area of ice.

Marjorie Coggan examining an ice-filled passage beyond the barrier in Skull Cave (**see lower right**).

Heppe Cave, which is noted for its huge passages and extensive breakdown. It also has a pool of water, which is an uncommon feature in this desert country.

Hercules Leg-Juniper Cave System, which has flat pahoehoe lava floors, wall dribbles and large Wood Rat nests. It also presents an opportunity to do a long through-trip.

Hopkins Chocolate Cave, which has chocolate-coloured walls, rafted blocks, slumped wall linings and superb lava drips.

Past visitors have left finger-mark graffiti in bacterial slime in Hopkins Chocolate Cave (**see immediate right)**.

Valentine Cave, which has fabulous lava cascades (**see upper right**), lateral lava benches (**see lower right**), pillars and looped passages.

Annual visitation to the National Monument is now running at many tens of thousands of people each year. As cave access is largely unsupervised, it is hardly surprising that it is not very difficult to spot the odd broken lava 'stalactite'; finger marks in the gold bacterial slime; signs of wear and tear on smooth lava floors; or the odd small piece of litter. However, considering how many visitors must have visited the caves since the National Monument was established nearly 100 years ago, these caves appear to be in remarkably good condition. National Parks staff in the Visitor Centre are helpful and appear to project appropriate messages in a positive manner to intending cave visitors. They also appear to take their obligations to minimise WNS risk seriously. Rangers regularly patrol the area in their vehicles. However, while we were there, the only time we saw any of them underground was on special ranger-led interpretive trips.

In conclusion, the Lava Beds National Monument has a rich tapestry of geological and cultural history and has an immense variety of relatively young lava caves in good condition. It is well worth the long drive (from anywhere) to get there.