Lava Butte, depicted above, is the cinder cone volcano located to the North of Lava Lands Visitor Center. It was created during a two-phase eruption just over 7,000 years ago. The first phase sent gas-charged molten rock into the air. The material solidified in the air, trapping gas bubbles, and fell back to the earth as cinders in a pile. The grey outline above indicates the size of Lava Butte today. Lava spilled out of a side vent during the second phase and flowed for several miles to the Deschutes River. The lava cooled into a field of basaltic rock. These volcanic features, and many others, are preserved as part of Newberry National Volcanic Monument. To learn more about the Monument check out the quick facts at the bottom of each page.

What Can I See In...

2 Hours:  
_Lava Lands Visitor Center and Lava Butte_  
Due to limited parking atop Lava Butte, 30 minute parking passes are issued on a first come, first served basis. Vehicles longer than 22 ft. prohibited. See page 6 for more information.

Half-Day:  
_Above sites plus explore Lava River Cave_  
Allow 2 hours, round trip, to see entire cave. Site gate closes at 4pm. See page 7 for more information.

Full Day:  
_Above sites plus Lava Cast Forest_  
Access site via gravel road, 9 miles one way. Pick up a brochure at one of the NNV visitor centers or download a PDF from Deschutes National Forest website.

2-3 Days:  
See ALL of Newberry National Volcanic Monument!  
Visit all of the above sites plus the following sites within the 
Newberry Caldera:  
Paulina Visitor Center  
Big Obsidian Flow  
Paulina Falls  
Paulina and East Lakes  
Drive to the top of Paulina Peak (7,984 ft.) for one of the best views in Oregon!

Useful Contacts

Newberry National Volcanic Monument  
Current Information Hotline  
541-383-5700

EMERGENCY 911

Newberry National Volcanic Monument  
www.fs.usda.gov/attmain/centraloregon/specialplaces  
Lava Lands Visitor Center  
541-593-2421

Deschutes National Forest  
www.fs.usda.gov/centraloregon  
Bend Fort Rock Ranger District  
541-383-4000

Discover Your Northwest  
www.discovernw.org/deschutes  
206-220-4140

Deschutes County Sheriff  
(Non-emergency and Animal Control):  
http://sheriff.deschutes.org  
541-693-6911

Oregon Department of Fish & Wildlife  
www.dfw.state.or.us/  
800-720-6339

ODOT Road Conditions  
www.tripcheck.com/  
1-800-977-ODOT (toll free in Oregon)  
1-503-588-2941 (outside Oregon)

Crater Lake N.P. Information  
541-594-3000

Quick Fact: Newberry is a shield-shaped composite volcano.
Newberry News

Wildlife Underpasses Win Award

By Sandra Jacobson, USFS Wildlife Biologist

Nowhere else in the U.S. can a person see a wildlife passage from the perspective of an animal. At Lava Lands Visitor Center (LLVC), the wide underpass for road 9703 is actually designed for wildlife to use as well as people. It is also unusual to have an underpass landscaped with a wildlife-friendly design. The structures here are the first for large animals in Oregon. This wildlife underpass project earned the Exemplary Ecosystem Initiative Award from the Federal Highways Administration.

The 4 mile long highway project, completed in 2012, contains designs specifically for wildlife protection. Check out the underpass with its stacked logs, boulders and native plants. This earthen pathway is designed to be large enough to allow large species like deer and elk to walk through, while providing hiding places among the rocks and logs for small animals like ground squirrels and lizards. Native soils were replaced in the underpasses, and compost was added to retain moisture providing a good seedbed for native plants.

An additional wildlife crossing was constructed south of LLVC, exclusively for wildlife. Fencing to exclude small and large animals from the highway and to funnel them to the underpasses runs the entire length of the project. Novel electrified mats in the road surface at exits and merge points to the highway function as a surface ‘fence.’

 Always give right of way to any wildlife you see while in the underpass. Dozens of animals and numerous wildlife species already use the structures as revealed by monitoring since July, 2012.

The project was also a success from the perspective of cooperation among agencies, including the US Forest Service, Oregon Departments of Transportation and Fish and Wildlife, and Federal Highways Administration.

More details on this project can be found inside Lava Lands Visitor Center, or on the Wildlife Crossings Toolkit at http://www.fs.fed.us/wildlifecrossings/case-stories/public-lands/LavaLands1507.php.

New Rules of the Road

Travel Management in the Deschutes National Forest

The goals of travel management are to minimize resource damage from motorized vehicles, reduce conflicts between users and improve the quality of recreational experiences.

Here’s what to remember:
- Travel only on open Forest Service Roads as indicated on the Motor Vehicle Use Map.
- Drive no more than 300 ft. from a Forest Service Road only to reach an existing, designated or defined dispersed campsite.
- (No dispersed camping in Newberry Caldera.)
- Park 30 ft. or more from any wetland, stream, river, spring or lake.

Maps are available at Lava Lands Visitor Center, Paulina Visitor Center and the Bend/Fort Rock Ranger Station.

The Greener Good

Deschutes National Forest is a leader in innovative ways to reduce fossil fuel usage within all aspects of operations; from hybrid vehicles to 100% off-the-grid facilities, the Deschutes National Forest is leading by example. The U.S. government challenged all federal agencies to reduce fuel consumption in facilities by 65% by year 2015 with the Energy Independence and Security Act of 2007. In 2013, the Monument is improving its solar power system at Lava River Cave (LRC), piloting the use of rechargeable lanterns at LRC, using bicycles for staff travel between Monument sites, installing bike racks at Lava River Cave, printing the Vista with 80% recycled paper and soy ink, and using E-85 fuel in one of our newer vehicles.

RECREATION PASSES ARE REQUIRED at designated day use sites on the Deschutes National Forest including sites within Newberry National Volcanic Monument.

Recruitment passes accepted include: National Forest Recreation Day Pass ($5), Annual Northwest Forest Pass ($30), Interagency Annual Pass ($80), Interagency Senior Pass ($10), Interagency Access Pass (FREE with documentation), the NEW Interagency Military Pass and the 3-day Monument Pass ($10). *The 3-day Newberry National Volcanic Monument Pass is only sold at Monument Welcome Stations (see below) and is good only for sites within the Monument.

Passes are available at Newberry National Volcanic Monument Monument Welcome Stations (Lava Lands Visitor Center, Lava River Cave, Paulina Visitor Center and Newberry Welcome Station), Forest Service offices throughout Washington and Oregon and online at: http://www.fs.usda.gov/detail/centraloregon/passes-permits/recreation.

Benefits: 95% of the revenue from Recreation Passes stays in the local area for facility maintenance, interpretive services, and ecosystem protection. These passes are your opportunity to care for our public lands and pass on your natural legacy. Thank You!

Newberry Volcano is 1,200 sq. miles in area, about the size of Rhode Island!
Ground-breaking progress was made last year in geothermal energy exploration on the west flank of Newberry Volcano, outside of Newberry National Volcanic Monument. AltaRock, a geothermal company based out of Seattle, successfully created multiple reservoirs in one wellhole utilizing new technology called an Enhanced Geothermal System (EGS). This is the first time ever that multiple reservoirs were completed in a single geothermal well, using a non-mechanical diverter.

This summer AltaRock plans to further test the reservoir and drill another deep well into the newly created reservoir on Newberry Volcano. During the hydroshearing process that took place from October to December of 2012, AltaRock recorded about 140 micro-seismic events from the cracking rock. The majority of events were less than Magnitude 1, which can only be detected with the most sensitive equipment.

The measured temperature of this deep 10,000-foot well is greater than 600°F. Water boils at 212°F (100°C), so there is a lot of potential heat that can be turned into energy. AltaRock created a large reservoir of micro-cracks using cold water, under pressure. Should power generation be pursued using this system in the future, the cold water would be heated by the rock and then brought back to the surface. The hot water would flash to steam and rotate turbines to make electricity.

Geothermal energy is a renewable energy source. This EGS demonstration project on Newberry Volcano greatly contributes to advancing the technology used in harnessing this energy source.

What is Obsidian?
Obsidian is a natural volcanic glass, remarkably similar to the glass in your windows. Unlike most rocks, obsidian is formed with minimum crystal growth and has a disordered internal structure similar to liquid.

Why Can’t I Take A Piece Home?
Newberry National Volcanic Monument was established by the U.S. Congress on Nov. 5, 1990. As stated in legislation, its purpose is to “preserve and protect for present and future generations Newberry’s remarkable geologic landforms.” Each of us plays a vital role in caring for our National Monument. Damaging or removing even a small sample of rock degrades the resource and it’s illegal (36 CFR 261.9 a and b). Please report any violations you see to a Forest Service ranger.

How Can I See Obsidian and Learn More?
Travel to the Newberry Caldera and hike the Big Obsidian Flow trail to observe this unique volcanic rock. To learn more or to obtain a sample of obsidian, visit the Paulina Visitor Center or Lava Lands Visitor Center.

For more information on the latest Newberry geothermal project:
visit AltaRock Energy - Newberry EGS Demonstration: www.altarockenergy.com/projects.html

Don’t be careless with food or garbage when camping. Wild animals, especially bears, may wander through at any time of day or night. Wild animals near a campground are more likely to lose their fear of humans. These animals can often become increasingly aggressive in their attempts to obtain human, pet, and livestock food.
NEWBERRY CALDERA

Paulina Visitor Center

OPEN 10am to 5pm
Weekends
Daily
Thursday - Monday

beginning May 11 and Memorial Day
June 22 - September 2
September 5 - September 30

VISIT the Paulina Visitor Center to get maps, information, and shop the Discover Your Northwest bookstore. Recreation passes are available for purchase when open, and the only Caldera self-service, 24-hour, day use fee station and information alcove are located in front of the visitor center.

WALK the Big Obsidian Flow trail, 1 mile loop trail exploring Oregon’s youngest lava flow offering a panoramic view of the caldera rim from the upper overlook. An accessible paved path leads to a steep set of stairs before crossing the rocky, uneven and sharp surface of the Big Obsidian Flow. Due to the sharp obsidian surface, closed toe shoes and pets are NOT recommended.

VIEW Paulina Falls, a short accessible path leads to the upper overlook and picnic site to view the 80-foot cascading waterfall. Hikers may choose to walk the ¼ mile one-way switchback trail to the base of the falls for a different perspective.

DRIVE or HIKE to the top of Paulina Peak, the highest point on the rim of Newberry Volcano. An unpaved 3 ½ mile road takes vehicles (less than 23ft in length) to the summit for a view into the Newberry Caldera and surrounding areas. The steep 2-mile, one-way trail begins just after the pavement ends on the Paulina Peak road. Road typically opens in late June.

LEARN about the Caldera at a Ranger Program! Inquire at the Visitor Center about program schedules.

HELP PROTECT YOUR MONUMENT RESOURCES
- No camping or campfires outside of developed sites in Newberry Caldera (36 CFR 261.58(a) and 36 CFR 261.52(a))
- 14-night stay limit on the Deschutes National Forest & Newberry Caldera (36 CFR 261.58(a))
- Do not carve, chop, nail, or otherwise damage trees or vegetation. Chainsaws in the campgrounds are prohibited.
- Limit firewood collection to ‘dead and down’ wood only and to locations outside of visual distance of developed sites.
- Do not remove or damage vegetation.
- Be ‘Bear Aware.’ Please store food properly and keep a clean camp.
- Do not use off-highway vehicles within Newberry National Volcanic Monument. (36 CFR 261.54(a) & 36 CFR 261.55(a))
- Control and clean up after pets (36 CFR 261.14(g))
- Do not remove or damage resources such as Obsidian.
- Don’t be a rock raider! (CFR 261.61(a))

SLEEP on a volcano!

Camping in Newberry Caldera is managed by Hoodoo Recreation. For reservations and information contact Hoodoo Recreation directly. www.hoodoo.com
Reservations (1-year): (877) 444-6777
Information (MF): 541-338-7869

Lodging and other amenities are available at the following businesses:
- Paulina Lake Lodge 541-536-2240 www.paulinalakelodge.com
- East Lake Resort 541-536-2230 www.eastlakeresort.com

<table>
<thead>
<tr>
<th>Newberry Area Campgrounds</th>
<th>Price Per Night</th>
<th>Total Sites / Reservable Sites</th>
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<tbody>
<tr>
<td>Prairie</td>
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<td>17 / 0</td>
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<td>Ogden Group Camp</td>
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<td>McKay Crossing</td>
<td>$10</td>
<td>10 / 0</td>
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<tr>
<td>Paulina Lake*</td>
<td>$16-18</td>
<td>69 / 39</td>
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<tr>
<td>Newberry Group Camp</td>
<td>$75-100</td>
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<tr>
<td>Chief Paulina Horse Camp</td>
<td>$14-18</td>
<td>14 / 14</td>
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<tr>
<td>Little Crater</td>
<td>$16</td>
<td>49 / 0</td>
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<tr>
<td>East Lake*</td>
<td>$16</td>
<td>29 / 0</td>
</tr>
<tr>
<td>Cinder Hill</td>
<td>$16</td>
<td>110 / 55</td>
</tr>
</tbody>
</table>

*Accessible sites may be available
Caldera Trails | Miles (One Way) | Elevation Change | Use | Difficulty
--- | --- | --- | --- | ---
Parallel Trail #58.3 | 2 | 6450-7000 feet | hike, bike, horse | moderate
Paulina Falls Trail #57 | 0.5 | 6120-6280 feet | hike only, accessible* | easy
Paulina Lakeshore Loop #55 | 7.5 (round trip) | 6330-6560 feet | hike only, accessible* | moderate
Paulina Peak Trail #57 (Spur trail) | 0.25 | 7800-7980 feet | hike only | moderate
Peter Skene Ogden Trail # 56 | 8.6 | 4300-6350 feet | hike, horse, bike (uphill only) | moderate
Silica Trail # 58.5 | 0.5 | 6350-6365 feet | hike only | easy
Crater Rim Trail #57 (loop) | 21 (round trip) | 6330-7600 feet | hike,bike,horse | difficult
Obsidian Flow Trail # 58.1 | 0.5 | 6330-6850 feet | hike only | moderate
Little Crater Trail # 53 (loop) | 1.5 (round trip) | 6330-6850 feet | hike only | moderate
Little Crater Tie | 0.6 | 6330-6600 feet | hike only | moderate
Lost Lake Trail #58.2/58.4 | 3.9 + 0.6 (Lost Lake S.) | 7100-7440 feet | hike, bike, horse | difficult
Newberry Crater Trail #3958 | 9.2 | 6350-7300 feet | hike, bike, horse | moderate

*Segment of trail is accessible
The most recent eruption on Newberry was 1,300 years ago which created the Big Obsidian Flow.

Things To Do At Lava Lands

Learn about volcanoes in the Lawrence A. Chitwood Exhibit Hall and orient yourself with the 3-D topographic model of Newberry National Volcanic Monument.

Drive to the top of Lava Butte, paved road 1 3/4 miles one way. Parking is limited to 10 vehicles (less than 22’ long), so please ask for a 30 minute time pass from the Ranger as you arrive. Lava Butte passes are issued on a first come, first served basis and on busy days there may be a wait.

Walk the Lava Butte Rim Trail, unpaved 1/4 mile loop with a panoramic view of Newberry National Volcanic Monument and surrounding area. Please stay on the trail and respect the fences.

Walk the Trail of the Molten Land, paved 1 mile loop. Full color interpretive signs provide for a self-guided tour. The first 1/3 mile of the trail is accessible. Other trail segments have grades that may be challenging without assistance.

Walk the Trail of Whispering Pines, paved 1/3 mile loop. Follow the edge of the Lava Butte flow as it winds through the shady whispering pines. Pick up an Interpretive Botanical Guide to learn about local plants along the way.

Shop in the Discover Your Northwest bookstore for books, maps and gifts.

Check at the visitor center front desk for Film and Ranger Program Schedule.

Remember: Please don’t feed the wildlife!

Pets are welcome outside the visitor center, on a leash. Please control and clean up after your pet.
LAVA RIVER CAVE
Discover another world below ground in Oregon’s longest lava tube (almost 1 mile each way). You’ll walk down over 100 stairs as you slowly descend into the darkness. Discover unique cave features formed by a massive lava flow long ago. A National Forest Day Pass or other valid Recreation Pass is required to enter. Bring your pass to the welcome station and then return it to your car.

OPEN 9am to 5pm
Site gate closes at 4pm
Thursday - Monday    May 2 - June 16
Daily                 June 17 - Sept. 2
Thursday - Monday    Sept. 3 - Sept. 30

HELP PROTECT LAVA RIVER CAVE BATS and stop the spread of White Nose Syndrome (WNS) by visiting the Bat Conservation Station at Lava River Cave. Pass the WNS screening and get your bat stamp of approval to enter the cave. See article below for more information on White Nose Syndrome.

PETS: Only certified service dogs are allowed in the cave provided a container is carried in to remove waste. Please either leave your pet at home or have a member of your party stay above ground with your pet. There is not enough shade in the parking lot to leave your pet in your vehicle safely.

CAVE CONSERVATION TOURS: 3:00pm, Daily (Limited to 15 people. Reservations accepted on the day of tour.) Join a guided tour of Lave River Cave to learn more about cave geology, ecology and stewardship.

CAVE RESTRICTION: The crawl space near the end of the Cave is CLOSED to visitors to prevent the potential spread of spores that cause White Nose Syndrome.

Protecting Bats at Lava River Cave
From White Nose Syndrome
by Julie York, USFS Wildlife Biologist

White Nose Syndrome (WNS) has killed almost 6 million hibernating bats in the Eastern and Midwestern U.S. since 2006. It now occurs in 22 states and 5 Canadian provinces.

WNS is caused by a cold-loving fungus that thrives in caves and mines. Named for the white powdery appearance around bats’ noses, the fungus may also occur on ears, wings, and forearms or may not be visible at all. The fungus agitates bats, awakening them during winter hibernation. Bats use up their water and fat reserves too quickly, reducing their chance for surviving winter. The fungus primarily spreads from bat-to-bat contact but may also be spread by bringing contaminated human clothing or equipment from one cave or mine to another.

There are no known health risk to humans from WNS. However, the impacts to humans from the loss of bats may be devastating. Bats play a crucial role in the health of our ecosystem by consuming many insects including pest species. Nationally, scientists estimate economic losses in the billions of dollars annually due to an increase in insect pests as a result of the high mortality of bats from WNS and wind powered turbines.

WNS is not known to occur west of the Rocky Mountains, so help us prevent or slow its spread by doing your part to keep this disease out of caves in Oregon.

For information about other caves on the Deschutes National Forest, please go to Lava Lands Visitor Center or Paulina Visitor Center.

For more information about White Nose Syndrome, scan this QR code with your smart device
Or go to: www.whitenosesyndrome.org

Quick Fact: Newberry Volcano’s oldest lavas are about 400,000 years old.
**Newberry National Volcanic Monument**

**Current Information Hotline:** 541-383-5700

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**POINTS OF INTEREST**

1) **Lava Lands Visitor Center** offers information, interpretive exhibits, films, bookstore, water, restrooms, trails, and picnic tables. Get a free 30 minute time permit, on a first come first serve basis, to drive up Lava Butte for a panoramic view of the Monument and surrounding area.

2) **Lava River Cave**, one mile long, is the longest lava tube in Oregon. Cave visitors should wear closed-toe shoes, warm clothing and carry at least two light sources. Rent lanterns at the site for $5.

3) **The Deschutes River and Benham Falls** are located on the northwest border of the Monument. Picnic, walk, bike, and observe wildlife along this scenic stretch of the Deschutes. Connect to the Deschutes River Trail here on foot or bike. Short interpretive loop trail from Benham Day Use Area tells the story of the site’s logging history. Benham Falls is ¼ mile walk from the parking area.

4) **Lava Cast Forest** offers a one-mile self-guided interpretive trail winding across a 7,000 year old Newberry Volcano basalt lava flow that enveloped a mature forest taking the shape of the trees as it cooled. Pick up an interpretive brochure at Lava Lands or download from the Deschutes N.F. website to ensure you have a brochure when you get there.

5) **Paulina Falls** drops dramatically nearly 80 feet over volcanic cliffs. Access the Falls via a short walk from the parking lot off Road 21.

6) **Paulina Visitor Center**, on the floor of Newberry Caldera, offers information, interpretive exhibits, a bookstore and a 24 hour information and day use fee station. Stop in for a ranger program schedule.

7) **Paulina Peak** is the highest point on the rim of Newberry Volcano at 7,984 feet offering a 360-degree view of the surrounding landscape. Vehicles less than 23 feet in length may ascend the unimproved road to the Peak when the road is snow-free and the gate is open, typically in June.

8) **Paulina and East Lakes** may originally have been one large lake, much like Crater Lake. The lakes offer sailing, paddling and fishing.

9) **Big Obsidian Flow** is Oregon’s youngest lava flow (1,300 years old). Over 170 million cubic yards of obsidian and pumice erupted from a vent within the caldera. A one-mile loop interpretive trail guides you across a corner of the flow.

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**Quick fact:** Newberry volcano has more than 400 volcanic cones and vents.