

Spattercone Self-Guided Trail

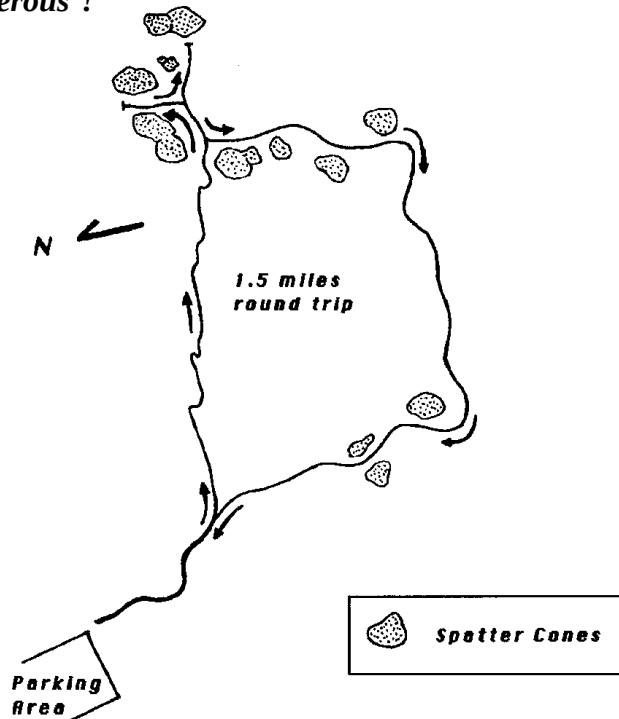
Welcome to Spattercone Trail. This 1.5 mile loop trail will take you to the origin of the recent Hat Creek Lava Flow, an area with many spattercones and associated volcanic features.



Some portions of the trail are steep. Due to hot, dry conditions, it is best to take this hike in the early morning or late afternoon. Carry water !

CAUTION

Stay on maintained trails! Some of the rock outcroppings and cave ins are unstable and dangerous !



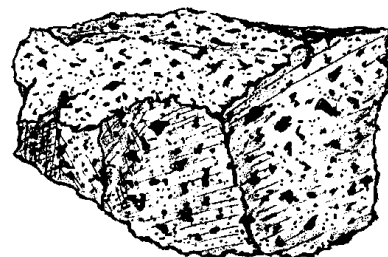
LONG RIVER OF LAVA

You are standing on the edge of the Hat Creek Lava Flow. About 20,000 - 30,000 years ago, large volumes of fluid lava poured from a series of fissures (cracks in the earth) and flowed northward for 16 miles, covering the floor of the Hat Creek Valley. The spatter cones, further up the trail, mark the approximate locations of these fissures.



ROCKS WITH HOLES

The rocks here and all along the trail are basalt, a fine grained dark volcanic rock rich in iron and magnesium



Notice the small holes in the rocks. This particular kind of rock is called *vesicular basalt* (from the Latin vesicular or "little bladder"), because of the small holes.

During solidification, trapped gas bubbles expand within the lava and escape into the atmosphere, leaving behind the small holes or cavities (vesicles).



POLLUTION INDICATORS

Look closely at these rocks; can you see any small, crusty green, grey and orange specs or blotches ? These are lichens - a type of fungus that grows in combination with algae, forming the small organisms that you see here.

The bright yellowish-green growth that you see on nearby trees is a larger lichen called Staghorn Lichen.

Lichens are sensitive to air pollution and are usually not found where air pollution levels are high. Some lichen species are even used to monitor changes in air quality. Based on what you observe about the lichen here, do you think the air here is fairly clean ?



United States
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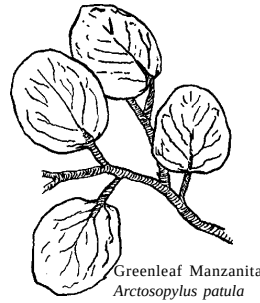
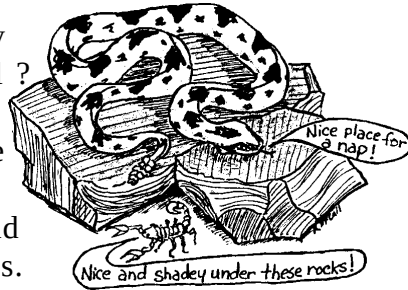
Pacific
Southwest
Region

Lassen National Forest
Hat Creek Ranger District



WHO LIVES HERE ?

Have you noticed any wildlife along the trail ? Birds commonly seen along the trail include Ravens, Steller's Jays, Red-tailed Hawks, and Rufous-sided Towhees.



Greenleaf Manzanita
Arctosopylus patula

Greenleaf Manzanita can be identified by its roundish, leathery, bright-green leaves and its smooth, reddish bark. Manzanita seeds were used by local Atsugewi Indians to make flour. Ripe, red berries were eaten as a fruit, while unripe, green berries were used to make tea and cider.

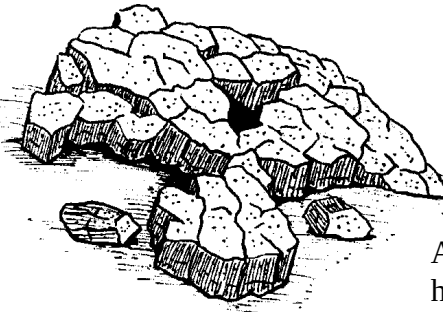
You'll be crossing the Pacific Crest Trail as you go straight ahead. **After crossing, go left at the trail fork.**



PUZZLE ROCK

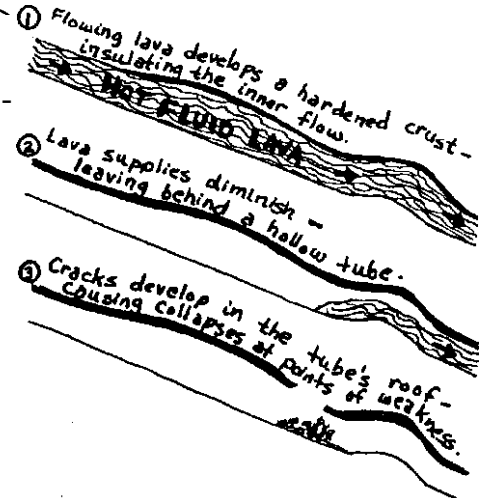
Lava from the Hat Creek Flow was very hot (about 2000 degrees F) when it poured out of the fissures. Fast hot flows such as this one are called Pahoehoe (Hawaiian word), pronounced pah-hoy-hoy flows.

This basaltic pahoehoe lava looks blocky, due to jointing. Jointing is a system of vertical cracks that form the lava as it cools and contracts, often leaving the lava separated into blocks and columns.



As the lava flowed downhill it developed many fingers that soon crusted over, restricting the inner flow to a "tunnel system".

HOLLOW WORLDS



As the inner liquid lava continued its course downhill, it sometimes flowed out of these hardened shells, draining them, and leaving behind many hollow tubes or caves.

Tube openings, such as this one, are caused when the tube's roof of hardened lava collapses.

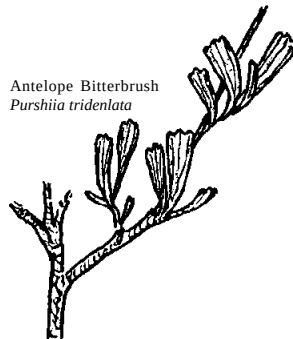
CAUTION - DO NOT ENTER
Loose lava rocks can be hazardous



HARDY INDIVIDUALS

As you can see, some plants do quite well on the flow's dry, thin soils. Lava joints provide spaces for plants to anchor their roots as do pockets of deeper soil.

Antelope Bitterbrush
Purshia tridenlata



The brush here is dominated by Bitterbrush and Greenleaf Manzanita.

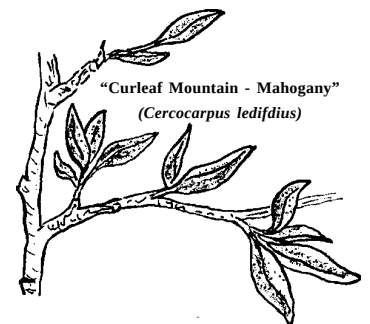
Bitterbrush has small, soft, pale green leaves and grayish brown bark. When in bloom, its flowers are pale yellow. It is a favorite food for deer.



LAVA TUBE LOCATORS

These clusters of small trees are "Curleaf Mountain-mahogany", a member of the rose family.

This tree tends to grow on or near lava tubes, as does green moss, often indicating the presence of unseen hollow tubes below the surface.



"Curleaf Mountain - Mahogany"
(*Cercocarpus ledifolius*)

Could the ground you're standing on be hollow underneath ?



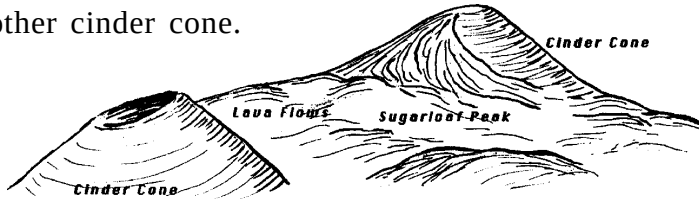
GIANT STEPS

Notice the three collapses heading downhill in a step-like manner. Prior to collapsing, this was one lava tube.



CINDER CONES

The large “symmetrical” volcano in front of you is Sugarloaf Peak, a young lava cone, probably less than 10,000 years old. Sugarloaf Peak is topped with a cinder cone. To the left, at its base, is another cinder cone.



Cinder Cones are small volcanic cones built entirely of fragmental materials (ash, cinder, etc.) which was explosively shot from their vents.

There's another tree-covered cinder cone in front of you to the right, can you find it ?



MORE HOLES !

COULD THIS BE PART OF THE SAME COLLAPSED LAVA TUVE YOU SAW AT POST #9 ?



SPATTER CONES

As lava poured from these fissure vents, built-up gaseous pressure near the vents caused some of the lava to be hurled up in fountains.



As large air-born clots of lava fell back to the lava surface, they “flattened” and plastered themselves together, forming spatter cones around the lava fountains.

When lava fountains “died”, they left craters like this one.



RED BASALT

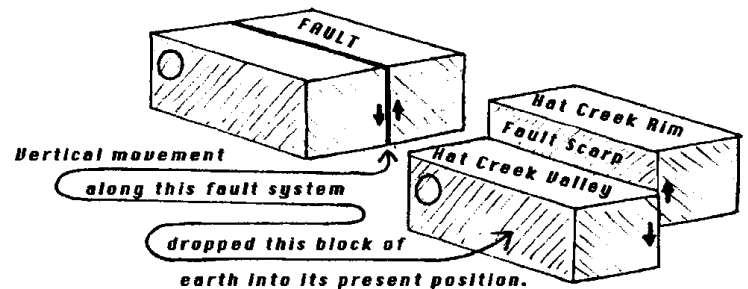
Although the red basalt on this spatter cone in front of you looks different from the black basalt, their chemical make-up is nearly the same. It is the exception that gives red basalt it's red color. What do you think that element is ? (Hint: think of rust)

During eruption, some lava rocks were exposed to more extreme temperatures than others. This additional heat caused much of the iron in the hotter basaltic lava to oxidize further (the same process that happens when iron rusts); giving it the distinctive red or rusty color.



AN OLD FAULT SCARP

Look past the rim of this large spatter cone towards the long ridge in the east. This ridge is the Hat Creek Rim, a fault scarp.



Nearly 1 million years ago, active faulting gradually dropped a block of the Earth's crust (now Hat Creek Valley) nearly 1,000 feet below the top of the Hat Creek Rim, leaving behind this large fault scarp.



COLLAPSE PIT

This vent was exposed when part of this small spatter cone's flank collapsed (notice the collapse rubble on the bottom).

The lava that once poured from this vent built the overlying spatter cone and the lava tube systems in the immediate area. As the eruption activity diminished, the lava drained, leaving behind this steep pit. Notice how the small spatter cone almost sealed itself up. **CAUTION - Stay a safe distance back.**

**These are hazardous formations.
DO NOT ATTEMPT TO ENTER**

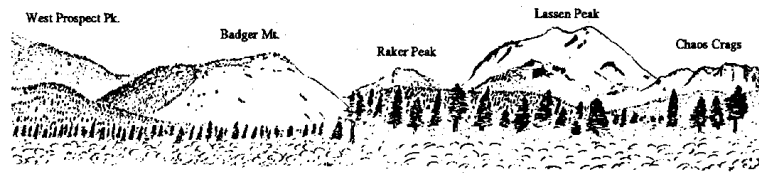


VOLCANOES EVERYWHERE !

Every mountain before you is a volcano, and each in its time helped mold the landscape with eruptions of ash and lava.

To the south is the largest volcano, Lassen Peak (10,457'). Lassen Peak is the southern most active volcano in the Cascade Mountain Range, a range that includes Mt. St. Helens, and which extends into Canada.

The rocky mass to Lassen's right is the Chaos Crag, and the large pointed volcano to your left is West Prospect Peak. Can you see the fire lookout on top ?



Lassen Peak broke out of its long sleep in 1914 when it started a series of explosive eruptions that lasted intermittently, until 1917. During that time, significant amounts of erupted ash landed in this area. Much of the soil you see here contains Lassen Peak ash.



THIS IS THE PLACE !

This area is where the Hat Creek Lava Flow originated. The spatter cones and lava mounds on this ridge mark the approximate locations of the underlying fissures that fed the lava flow.

As the lava poured out of these fissures, most of it flowed east, down this ridge, and then continued north for 16 miles, following the slope of the land through Hat Creek Valley and leaving behind a thick covering of basalt.

Return to the trail junction. The loop trail continues, taking you past more spatter cones, lava flows and scenic vistas, and will return you to the parking area.

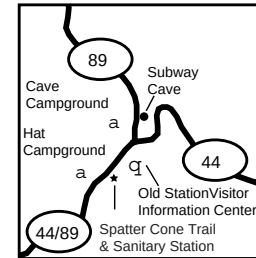


THINGS TO LOOK FOR ON RETURN TRIP

- ☐ 1. Spatter cone (with a crater 33 ft. in diameter)
- ☐ 2. Collapsed Lava Tubes
- ☐ 3. Pahoe-hoe Lava (refer to stop # 5)
- ☐ 4. Red basalt
- ☐ 5. Hardy individuals - Bitter brush, and Greenleaf Manzanita

MORE INFORMATION on local geology is available at Subway Cave, an easy 1/3 mile walk that leads you through a large lava tube, or at the Old Station Visitor Center, and Lassen Volcanic National Park.

Subway Cave is located 1/2 mile north of Old Station on Highway 89, across from Cave Campground.



Old Station Visitor Information Center is located just south of the Highway 44/89 junction in Old Station. Lassen Volcanic National Park entrance is 13 miles south of Old Station on Highway 89.

If you would like learn more about geology, volcanoes, or the Cascade Mountain Range, you might consider reading:

- Fire Mountains of the West by Stephen L. Harris
- Roadside Geology of Northern California by David D. Alt & Donald W. Hyndman
- Through Vulcan's Eye by Philip S. Kane

If you have any suggestions or questions about other areas of the Hat Creek Recreation Area, please contact us:

Lassen National Forest, Hat Creek Ranger District, P.O. Box 220, Fall River Mills, CA 96028 530-336-5521. Our office is open 8:00 A.M. - 4:30 P.M. Mon. - Fri. The Old Station Visitor Information Center is open on weekends in the Spring & Fall and seven days a week during the Summer season.