



Driving to Lassen Volcanic National Park via Highway 36

Tree species change as altitude increases. Can you find the spot along Hwy 36 (about 1100 ft elevation) where gray pine (aka ghost pine) suddenly gives way to green ponderosa pine?

Brief Geological Background of Lassen Volcanic National Park

Mt. Lassen is the southernmost Cascade volcano. The Cascade volcanoes are part of the Pacific Ring of Fire, volcanoes all around the Pacific Ocean. The entire Cascade Range is the result of Pacific tectonic plates diving (being subducted) beneath the North American Plate and becoming crumpled up into mountains.

Three to four million years ago, older volcanoes (now extinct) poured out lava to form the Tuscan Formation, a lava plateau upon which Lassen Volcanic National Park (LVNP) sits. Rocks and basalt-capped mesas of the Lassen Foothills along Hwy 36 are a remnant of past volcanic activity.

About 600,000 years ago, ancestral Mt. Tehama (aka Brokeoff Volcano) formed, erupted for about 200,000 years, and finally collapsed. Today's Lassen volcano is just a dome on the north rim of ancestral Mt. Tehama.

Rock terms:

- **dacite** is high-silica, thick, holds gas and water vapor, and erupts explosively or like toothpaste; Mt. Lassen is a dacite dome, like toothpaste.
- **basalt** is low-silica, more fluid, and erupts as liquid lava.

(See Wikipedia's *Geology of the Lassen Volcanic Area* for further information.)

Flora of Lassen Volcanic National Park by Waystation

These lists are not exhaustive, and indicate only a few possibly-blooming species. The occurrence of plants is determined by altitude (colder at higher elevations), exposure (sun vs. shade), water (streamside meadow vs. rocky slope), time of year, and forest type.

#1 Waystation: Brokeoff Mountain Trailhead Parking Lot

7.8 miles from Hwy 36 on Hwy 89, parking area on right for ~10 cars, before the pay station; altitude 6635 ft.

Achillea millefolium, yarrow
Aconitum columbianum, Columbia monkshood
Aconogonon phytolaccifolium, alpine knotweed
Agoseris aurantiaca, orange-flowered agoseris
Agoseris grandiflora, large-flowered agoseris
Alnus rhombifolia, white alder
Anaphalis margaritacea, pearly-everlasting
Angelica breweri, Brewer's angelica
Aquilegia formosa, crimson columbine
Calochortus leichtlinii, Leichtlin's mariposa-lily
Calochortus nudus, naked mariposa-lily
Ceanothus cordulatus, mountain whitethorn
Collomia grandiflora, large-flowered collomia
Delphinium nuttallianum, Nuttall's larkspur
Dicentra formosa, Pacific bleedinghearts
Equisetum arvense, common horsetail
Ericameria nauseosa, rubber rabbitbrush

Eriogonum nudum var. *pubiflorum*, hairy-flowered buckwheat
Erysimum capitatum var. *capitatum*, western wallflower
Erythranthe primuloides, primrose monkeyflower
Hackelia micrantha, small-flowered stickseed
Heracleum maximum, cow-parsnip
Lilium pardalinum, leopard lily
Osmorhiza occidentalis, Sierran sweet-cicely
Potentilla gracilis var. *fastigiata*, slender cinquefoil
Ribes roezlii, Sierra gooseberry
Sambucus nigra ssp. *caerulea*, blue elderberry
Senecio sp., ragwort
Thalictrum fendleri, Fendler's meadow-rue
Valeriana californica, California valerian
Veratrum californicum, California corn-lily
Wyethia mollis, woolly mule's-ears

Mount Lassen Volcanic National Park Car Tour

#2 Waystation: Kohm Yah-Mah-Neer Visitor Center

0.2 mile after pay station; altitude 6673 ft. Restrooms; native plant garden.

Mt. Lassen is a spiritual landmark: *kohm yah-mah-nee* means snow mountain in the Mountain Maidu language. Native peoples recognized the four cardinal directions, plus “toward the mountain.” Find:

Arctostaphylos nevadensis, pinemat manzanita
Monardella odoratissima ssp. *pallida*, pallid
mountain monardella

Pteridium aquilinum, western bracken fern
Cirsium scariosum, elk thistle

#3 Waystation: Sulphur Works

1.8 miles from south Park entrance; parking lot on left; altitude ~7000 ft.

Evidence that there really is an active volcano!

Brief history of Supan’s Sulphur Works

1865–1885: Mathias Supan mined the area to produce bricks, dyes, and medicinals; Supan had a storefront in Red Bluff during the winters.

1940s: Mineral baths, the Sulphur Works Inn, winter skiing.

1950s: Acquired by the National Park Service and undergoing restoration to natural habitat.

Boiling mudpots, fumaroles (steam vents); hydrogen sulfide gas (the odor) is converted to sulfuric acid, which decomposes the rocks. Molten rock is 3 miles down; water at the surface is 196 °F. Extremophiles are organisms capable of living in extreme conditions, such as boiling mudpots, animal intestines, etc. Many of these bacteria-sized beasts are members of the group Archaea. If there is or was life on Mars, maybe the organisms would be like these. Find:

Pinus monticola, western white pine
Arctostaphylos nevadensis, pinemat manzanita (with galls)
Chrysolepis sempervirens, bush chinquapin

#4 Waystation: “Chicken Shack Meadow” (AKA Little Hot Springs Valley)

4.0 miles from south Park entrance; good pullout on the right. LVNP interpretive sign #4.

Visitors to the mountain could buy chickens here for camp food. Mind the hole; it is an archaeological feature. Look for the following on both sides of the road:

Aconogonon davisiae, Davis’ knotweed
Artemisia ludoviciana var. *ludoviciana*, silver
wormwood
Balsamorhiza sagittata, arrow-leaved balsamroot
Caltha leptosepala, marsh-marigold
Cirsium scariosum, elk thistle
Erythronium purpurascens, purple fawn lily
Hackelia californica, California stickseed (along road)
Hackelia micrantha, small-flowered stickseed
Helianthella sp., sunflower
Lupinus lepidus, rabbit lupine
Lupinus lepidus var. *sullulus*, stool lupine
Monardella odoratissima ssp. *pallida*, pallid
mountain monardella

Oreostemma alpigenus var. *andersonii*, alpine aster
Pedicularis groenlandica, elephant’s-heads
Platanthera dilatata var. *leucostachys*, white bog orchid
Platanthera sparsiflora, sparse-flowered bog orchid
Primula tetrandra, alpine shooting star
Ranunculus alismifolius, water-plantain buttercup
Ranunculus flammula, creeping buttercup
Sambucus racemosa, red elderberry
Senecio aronicoides, rayless ragwort
Solidago sp., goldenrod
Veratrum californicum, California corn lily
Viola bakeri, Baker’s violet
Wyethia mollis, woolly mule’s-ears

Mount Lassen Volcanic National Park Car Tour

#5 Waystation: Little Hot Springs Valley Overlook

4.3 miles from south Park entrance; first good pullout on right after Chicken Shack Meadow.

Diamond Peak (look down the valley) is made of harder material than other Lassen rocks and thus has persisted longer. Diamond Peak was the core of ancestral Mt. Tehama (Brokeoff Volcano). It is named for the hydrothermal quartz crystals found in lava. This site will have mountain meadow flowers in bloom later than at Chicken Shack Meadow. Look on both sides of the road for:

Erythronium purpurascens, purple fawn lily

Pedicularis groenlandica, elephant's-heads

Perideridia sp., yampah

Platanthera dilatata var. *leucostachys*, white bog orchid

Platanthera sparsiflora, sparse-flowered bog orchid

Primula tetrandra, alpine shooting star

Senecio sp., ragwort

#6 Waystation: Bumpass Hell Parking Lot

5.7 miles from south Park entrance; pullout on right.

Here we are near timberline. Peaks are remnants of ancestral Mt. Tehama. The large boulder is a *glacial erratic* left behind by the glacier that scoured this valley. Look for the deep scratches and polished surfaces left by the glacial "river of ice." For flora, look for:

Aconogonon davisiae, Davis' knotweed

Arctostaphylos nevadensis, pinemat manzanita

Holodiscus discolor var. *microphyllus*, rock-spiraea

Myriopteris gracillima, lace lip fern

Penstemon newberryi, mountain-pride

Pinus albicaulis, white-bark pine (shrublike at timberline)

Tsuga mertensiana, mountain hemlock

#7 Waystation: Lassen Peak Quick Stop

7.0 miles from south Park entrance; photo-op stop. Look for "Vulcan's Eye" on the dome.

#8 Waystation: Kings Creek Meadow and Road

11.1 miles from south Park entrance. The picnic area, *not* Kings Creek Falls Trailhead.

Find:

Aconogonon davisiae, Davis' knotweed

Angelica capitellata, swamp whiteheads

(AKA ranger's buttons)

Caltha leptosepala, marsh-marigold

Drymocallis glandulosa, sticky cinquefoil

Erythranthe tilingii, Tiling's monkeyflower

Erythronium purpurascens, purple fawn lily

Gentiana newberryi var. *tiogana*,

Sierran alpine gentian

Kalmia polifolia, alpine laurel

Lupinus obtusilobus, satin lupine

Micranthes odontoloma, stream-bank saxifrage

Penstemon rydbergii var. *oreocharis*, meadow penstemon

Phyllodoce breweri, Brewer's mountain heather

Pinus contorta, lodgepole pine

Primula tetrandra, alpine shooting star

Stellaria sp., chickweed

Mount Lassen Volcanic National Park Car Tour

#9 Waystation: East Fork Hat Creek (17.1 miles from south Park entrance.)

Find:

Castilleja sp., Indian-paintbrush
Drymocallis glandulosa, sticky cinquefoil
Eriogonum nudum var. *pubiflorum*, hairy-flowered
buckwheat
Lonicera involucrata, twinberry
Lupinus sp., lupine
Penstemon gracilentus, slender beardtongue

Populus trichocarpa, black cottonwood
Pterospora andromedea, pinedrops
Ribes cereum var. *cereum*, wax currant
Ribes roezlii, Sierra gooseberry
Ranunculus aquatilis, water buttercup
Symphyotrichum sp., aster

#10 Waystation: Nobles Immigrant Trail (18.1 miles from south Park entrance.)

Snow plants are often found under five-needled pines, such as western white pine. They are mycoheterotrophic plants, which steal sugars from trees by way of a bridge between a mycorrhizal fungus and tree root.

Find:

Arctostaphylos patula, greenleaf manzanita
Calyptridium umbellatum, pussypaws
Castilleja arachnoidea, cobwebby paintbrush
Chimaphila menziesii, little prince's-pine
Chrysolepis sempervirens, bush chinquapin
Eriogonum nudum, nude buckwheat
Erysimum capitatum var. *capitatum*, western
wallflower
Lupinus sp. (a silvery lupine)
Maianthemum racemosum, western false
solomon's-seal

Monardella odoratissima ssp. *pallida*, pallid
mountain monardella
Penstemon davidsonii, Davidson's
beardtongue
Penstemon gracilentus, slender penstemon
Penstemon newberryi, mountain-pride
Pyrola picta, white-veined wintergreen
Sarcodes sanguinea, snow plant
Pterospora andromedea, pinedrops

#11 Waystation: Manzanita Lake Road (an optional stop) (27.5 miles from south Park entrance.)

Find:

Pterospora andromedea, pinedrops (mycoheterotrophic, in association with *Rhizopogon* fungi)

#12 Waystation: Loomis Museum (27.6 miles from south Park entrance.)

Restrooms, museum. Find:

Ericameria nauseosus, rubber rabbitbrush
Pinus jeffreyi, Jeffrey pine, with *Letharia vulpina*, wolf lichen