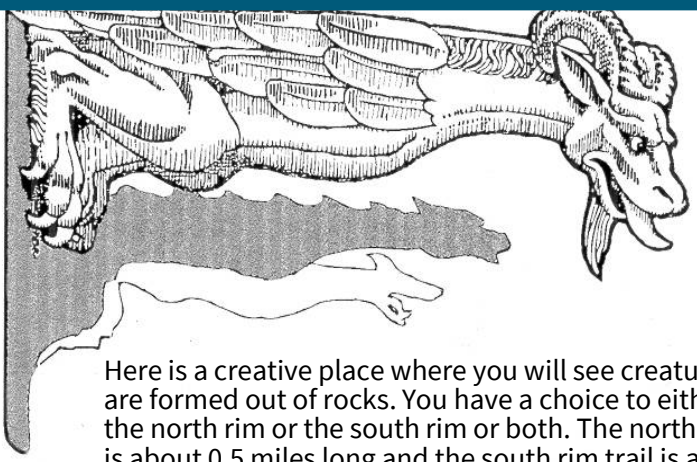
Welcome to the Trail of the Gargoyles

Stanislaus National Forest



Here is a creative place where you will see creatures that are formed out of rocks. You have a choice to either walk the north rim or the south rim or both. The north rim trail is about 0.5 miles long and the south rim trail is about 0.5 miles long. Both of the trails have different views and different features to learn about and see.

Please stay on the trail and avoid the cliffs for your own safety and also to prevent erosion of these delicate and loose soils.

South Rim

1 Lahar

Beginning millions of years ago large amounts of ash mixed with snow or water. This formed hot oozing mud that ejected from numerous vents several miles to the east. Small cinders and stones were swallowed up until the steaming liquids finally cooled into the material you see today. North across the canyon and slightly to your left are prominent cliffs consisting of the same lahar or mud flow material on which you stand. The central deposits have since been eroded by glaciers and streams.

2 River of stone

Directly across the canyon is a small, dark strip of rock. Follow it to the right as it thickens and then thins again. You are seeing the eroded cross section of an ancient river channel that has been blocked by hard lava. Above and below are the deposits of lahar.

3 Story book of trees

This cozy grove consists mostly of Jeffery pine and western juniper. Junipers, with their stringy red bark, are capable of withstanding nature's brutal forces. Many have lived beyond 1,000 years. Humans use berries of the junipers for flavoring gin. The frost-resistant Jeffery, recognized by its plate-like bark and long needles. It most commonly grows between 6,000-9,000 feet and has an odor like vanilla. Disbelievers may sniff freely.

4 Satan's Slipper

Wide sweeping floods of molten rock and mud continually change the face of these mountains, nature is never satisfied and is always redesigning the landscape. The soft lahar, a loosely jointed conglomerate is more susceptible to erosion than solid rock. Here is one may see the process that formed these *gargoyles,* visible on the north rim trail above the River of Stone.

5 Death Slide

WARNING: USE CAUTION – LOOSE SOIL – STEEP CLIFF

As rain and melting snow gather in this once-natural depression, forces of erosion were set in motion. The larger the hole became, the greater the annual volume of water that would eventually carve out the tunnel. To your left is a granite, glacial erratic. Notice its composition differs dramatically from the lahar on which it rests. Until the theory of glacial transportation, geologists were puzzled by these displaced stones.

6 Pages of the Earth

As the ancestral Sierra gradually eroded, the underlying granite was with each succeeding event. Like pages of a history book, geologists read the layers of earth's crust to piece together our planets evolution. The far canyon wall contains records of many volcanic events, one on top of the other.

7 Wall of Noses

The "noses" to your left have been meticulously formed by two separate ash flows followed by water erosion. After cooling, the lower bed accumulated soil on its surface before a second flow happened. This ancient paleosol is distinguished by the thick line of clay dividing the upper and lower parts of the formation. Scientists' can sample paleosols for pollen traces to determine past vegetation. Across the canyon, above and to the left of the River of Stone, is another light grey bed of ash. Could all of these have belonged to the same formation?

8 The Maze

On top of the "noses" is a close-up view of a type of ash we see across the canyon. Note its fine consistency as compared to the mud flows seen previously. Harder than the eroded lahar that once surrounded this outcrop it, too, is dwindling in the face of rain, snow, and wind. This final stop provides an excellent view. Notice the River of Stone and its channel's clear outline. We can see layers of lava. Before returning, pause for a moment to absorb the now gentle scenery, superimposed over the violent power of nature so magnificently frozen in stone.

North Rim

1 Devil's horns

Somewhat to the right of the canyon center, on the near horizon are two protruding blocks. Eroded by weathering and glacial activity. These mud flow remnants, though miniature by comparison, are similar in formation to the Dardanelles on Highway 108.

2 The Hidden Columns

These rocks are the tops of columns of *basalt,* and igneous (fire-formed) rock containing an abundance of dark ferro-magnesian (iron and magnesium) minerals. They extend into the ground perhaps 50-60 feet and result from a lava flow that cooled under ideal conditions, forming the same pattern as a mud flat that dries and cracks in the burning sun. "Frost wedging", the expansion process of freezing water and the accumulation of soils and plants in the

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3 Forests interpretive association

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cracks, will eventually topple the columns. Ahead is a large, windswept Jeffery pine, a standing testimonial to another of nature's weather forces. Another place to see the full columns of basalt would be the Columns of the Giants

3 Lichen

The scaly and colorful substance on this "ock" is called lichen, a fungus and an algae growing together for mutual benefit a process known as symbiosis. The fungus provides shelter and structure, absorbs moisture from the rocks surface by producing an acid. So it is that lichens aid in the decomposition process of rock. The algae provides chlorophyll that manufactures food for both members out of the water and carbon dioxide. Some lichens grow quite slowly- one square inch every fifty years!

4 Valley of Trees

The trees whose bark resembles "scales whose cones are small and whose needles are short and paired, are lodgepole pine, once used by various Native American tribes for constructing lodges. The young trees with smooth, sliver bark and short flat needles are white fir. Here too are the Jeffery pine with its puzzle like bark, long needles in bundles of three and pineapple sized cones. The gnarled tree with reddish bark is the western juniper. Pine mat manzanite, a low shrub, sprawls beneath you. Many of the older trees have died in this area, but there are benefits to having these trees. Lots of different species can use these trees for habitat including birds, insects, and different lichen.

5 Juniper Falls

This western juniper is an example of one of the more enduring and picturesque dwellers of the high Sierra, growing many times granite domes and cliffs. Found between 6,500-10,500-foot elevations, it frequently survives upmost 1,000 years and produces a bluish, berry-like fruit about 1/3 inch in diameter. These seeds provide an excellent food source for birds, many seeds will not germinate unless passed through an animal's digestive tract. Thus, wildlife plays an important role in the juniper's preservation. The erosion depression to your right is the top of Juniper Falls and will be discussed next stop.

6 The Sculpter

During and after the active volcanic period. Large mountain glaciers appeared, shaping much of what we see today. Evidence of their presence is behind you. These rocks, once frozen into the glacier bottom, acted as carving agents like sand in sandpaper. When the ice receded about 10,000 years ago, they were left behind as moraine. Water from this melt cascaded to the valley below with great fury, supplementing the handiwork of erosion. Notice the cliff wall and its inevitable destruction, brought about by the powerful and unforgiving forces of nature.

7 Flagstone Quarry

The era of fire began in the Sierra Nevada several million years ago and continues today. Volcanic vents produced multitudes of flows occurring at various places and times. This lava consists almost entirely of basalt. The "cooling cracks" in the lava have been progressively enlarged by freezing water, contributing to its shattered appearance. Fragments broken loose by frosting tumble to the talus, or rock pile below. In the canyon walls to you left are lines that denote the boundaries of mud and lava flows. The earlier flows occurred at the bottom and the more recent ones at the top.

8 Passage of Stones

Around you are many boulders, further indication of glacial activity. Many consists of lava cinders mixed with mud flow debris and rocks of rubble from hard lava. In the mud flow material, notice that the dark glassy fragments or inclusions, called clasts, are aligned horizontally, probably due to vertical gravitational pressure while the host material was in a fluid state.

9 Gargoyle Ridge

There they are… the Gargoyles those strange mythological creatures, emissaries of the Prince of Darkness. Or perhaps you don't see them at all. Maybe you see teddy bears or bunny rabbits instead. This is a place of imagination. Remnants of ancient mud flow that possibly include devil horns signal that these marvelous creatures are the by-products of wind, rain, snow natures tools for meticulous design. Softer than hard lava, mud flows tend to erode ore rapidly and, often, more dramatically.

10 Ash

Look up the hill at the lightly colored material. That is volcanic ash, and fine hot particles of rhyolite that settled and mixed with water. It may have flowed in a channel that once extended across this canyon prior to being eroded during the last glacial period.

11 Strip of fire

Notice the horizontal, slender line of hard lava on the wall head? Follow it toward you., The lac gradually thickens, becoming thin again near the parking area. At the time of the flow occurred, it probably followed a small canyon or channel formerly where you stand and long-since gone.

A dramatic view of this feature can be observed from the South Rim Trail. Beyond the parking area in the distance a ridge of the lighter rock called granite, the heart of the Sierra Nevada having been exposed when the older rock above it wore away. Behind you us an eye of a needle, together with a host of little creatures to watch over you safely on your journey home.