

TROUT CREEK CANYON TRAIL

#270



A COOPERATIVE PROJECT BETWEEN THE

As you hike this trail, remember, the forest belongs to everyone, so stay on the trail, leave only footprints, and take only pictures, notes, and memories.





Forest Road
138

Trout Creek Canyon Trail Map

Trail Length:

*Accessible interpretive trail 1 mile
(one way, not a loop trail).*

3 miles to Forest Road #138

KEY:

-  Interpretive Trail
-  Hiking Trail
-  Streambed
-  Picnic Table
-  Bridge
-  Road #138

TROUT CREEK CANYON



Campground ▲

GIVE A HOOT!



Please help take care of public lands. Remember, they belong to you. If you pack it in, pack it out. Be sure to wear proper footwear and clothing suitable for the weather conditions expected.

Binoculars are handy for spotting wildlife, and a camera might capture an unexpected critter. Respect the wildlife you see. Stay a safe distance away and remember: you are a visitor in their home.

We hope you enjoy your hike on the Helena National Forest!



WELCOME

Welcome to the Trout Creek Canyon Trail #270. This is a three-mile long trail along the bottom of a spectacular limestone canyon. The trail starts at an elevation of 4460 ft. and climbs a gentle 540 ft. over its length. The first mile of the trail is a broad, graveled accessible trail with numbered stations keyed to this interpretive brochure.

As you travel through the canyon, you may notice remnants of a forest road that was built and damaged by floods on several occasions until a very large flood in 1981 destroyed the road. Since 1981, the Forest Service has maintained a trail through the canyon. While still a road, it was a part of a local scenic driving route called the “Figure 8” route for the shape of the road as seen on a map. The 8 crossed at the intersection of Jimtown road and York Road. The “top” of the 8 went from York to Nelson and to the top of Hogback Mountain and down through Trout Creek Canyon back to York (or the other way around). The bottom of the 8 went from Helena to Canyon Ferry Dam to York and back to Helena on York Road.

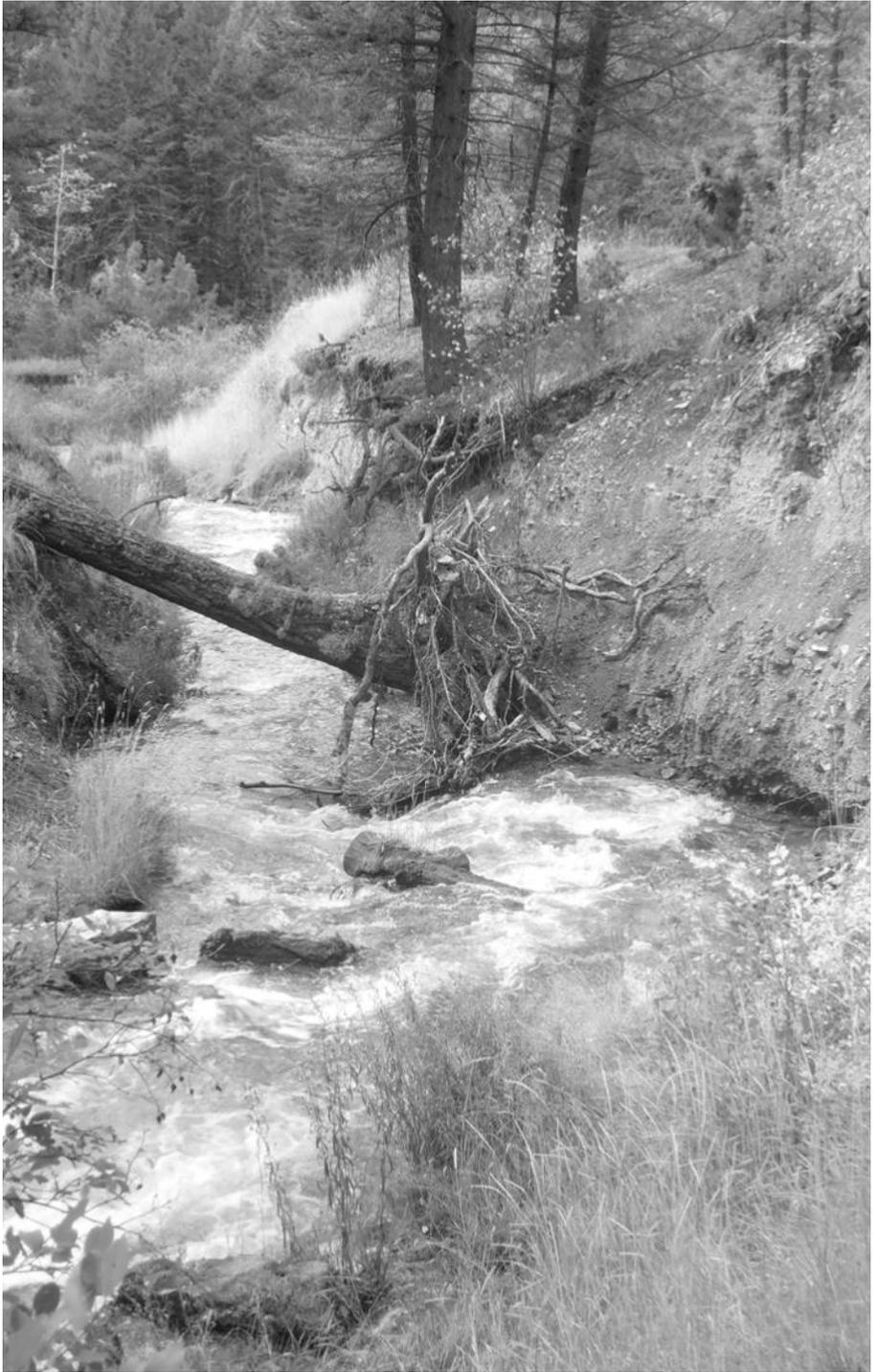
The Trout Creek Canyon was a very special stretch of that scenic route due to its spectacular geology. Now you can enjoy the quiet splendor of the canyon without a car. This brochure is designed to introduce you to several of the features that make this such a special place. We hope you enjoy your visit and return often.

STATION I: THE POWER OF EROSION

Trout Creek Canyon is full testimony to the power of stream erosion. Flowing water has cut through the thick limestone layer forming the walls of the canyon — assisted, no doubt, by a crack or other natural weakness in the rock mass. Over the years much of what was carved from the rock has washed down to the Missouri River. Larger pieces, however, were deposited over the years on the canyon floor. As the water rises in spring high water and floods then falls to summer and autumn low flows. The deposited material, alluvium, builds up and moves around.

At this station, Trout Creek is currently working away at moving a good bit of the alluvium further down its course. This has resulted in the deeper cut of the stream right here. Look across the stream to see how the layers of the alluvium were deposited in uneven beds now eroded and left visible.

The stream has also cut under the bank near the shoulder of the trail leaving it a bit unstable. Similar situations will be encountered further upstream, so please watch your step to avoid an unplanned descent.



STATION 2: CANYON VEGETATION

A wide variety of vegetation grows in the canyon. Most notable are the Douglas fir trees that blanket the ridges and hillsides. Douglas fir is native to the northwest United States and is close to the eastern edge of its natural range in Montana. Because it is one of the most popular



Douglas fir

lumber trees in the world, however, it is now grown in appropriate habitats in many other countries. Douglas fir is also a popular Christmas tree.

Douglas fir has single, short, flat needles 2 to 3 cm long that grow along the stem of the tree and all the way around like a bottle brush. The needles are soft to the touch.

Douglas fir is not a “pine” tree and, despite its name, it is not a “fir” tree either—just a Douglas fir.

There are some pine trees in the canyon and on the hillsides. As of this writing in 2010 many pines were already dead from mountain pine beetle attacks. Pines can be distinguished from Douglas fir because their needles are longer and form clumps at the end of the stems. Look closely at the needles to notice that they grow in little bundles. Lodgepole pine needles grow in bundles with two needles each. Ponderosa pine, Montana’s state tree, grows with needles in bundles of three.



Ponderosa Pine



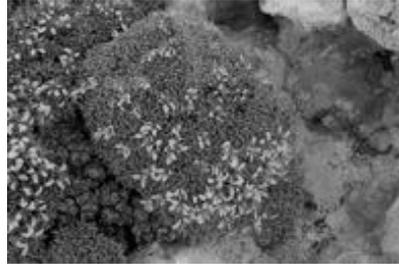
Quaking Aspen

You may also see quaking aspen trees in the canyon. The bark on the lower trunk of quaking aspen is black and rough lower down and greenish white and smooth with rough black spots and lines higher up. The leaves are oval to round 2 to 8 cm long and pointed at the tip — a very distinct shape. The shape of the leaf contributes to instability in a breeze, so they flap back and forth in the wind. Looking like the tree is

trembling or quaking. Hence the common name.

The riparian shrubs in the canyon are very prominent and interesting. You can see red-osier dogwood interspersed and over towered by Rocky Mountain maple. Both shrubs have red stems. The dogwood has its little white, four-petaled flowers bunched in a flat-topped structure (a cyme). Late in the season there will be numerous white berries. That is until the birds find them. The Rocky Mountain maple has distinctive maple shaped leaves, an inconspicuous flower, and distinctive maple-shaped “helicopter” fruits (samaras). The canyon is also well populated with wild raspberry, which you may find growing in broken rocks right next to the trail.

Clinging to limestone cliffs you may notice a sage-green colored plant that looks a bit like moss. This plant, called one-flowered Kelseya, or scientifically, *Kelseya uniflora* is a member of the rose family named for Francis Kelsey who discovered it near here in



Kelseya Uniflora

1888. Small pink-white flowers cover the plant in spring. This plant is very rare, growing only in a few localities on limestone crevices east of the continental divide in Montana, south-central Idaho, and the Bighorn Mountains of Wyoming. Botanists report that it is struggling to survive in the Bighorn Mountains and some other places in its range. Trout Creek Canyon may be one of the easiest places to see this plant. While it is called Kelsey moss by some, that name is misleading as it is not at all a moss.

During spring and summer, many other wildflowers grow along the stream banks and among the numerous shrubs. The garden constantly changes throughout the season.

STATION 3: MADISON LIMESTONE

The steep gray-white walls of Trout Creek Canyon consist of exposed limestone of the Madison Formation of rock visible also at the Gates of the Mountains, Sluice Boxes State Park and the Smith River Canyon in the Little Belt Mountains. The limestone consists of calcium carbonate, a rich sediment laid down during the Mississippian Period of the Paleozoic Era (roughly 350 million years ago). The formation, now 1,000 to 2,000 feet thick in Montana was laid down in a shallow sea far south of here about 15 to 20 degrees north of the equator and moved north by continental drift.

After the land mass moved to about where it is now on earth, a period of mountain building called the Laramide Orogeny pushed up the Rocky Mountains and the Madison formation rode the rising continent upwards. This process lasted millions of years lifting rocks in this area approximately 65 to 70 million years ago. In the process, the rocks of the Madison Formation were subjected to intense pressure that raised, folded, and cracked the rocks. Along the canyon walls you can see tilted and folded layers of rock that were originally laid down horizontally and came to their current shape through these incredible forces.

Additional forces that formed the canyon include erosion from ice-age glaciers that not only scraped along the tops of the mountains but also sent great amounts of melt water through cracks and channels in the rock as they receded.

Because of impurities, such as clay, sand, organic remains, iron oxide and other materials as well as lichens growing on the surface, these limestone walls will vary in color. The red stains you can see on the rocks in the canyon are caused by a mineral called hematite, which is an iron oxide that has dissolved and spread across the rock.



STATION 4: MIXING STREAMS

Both air and water temperatures in the canyon are subject to widely varying temperatures due to differing exposures to the sun. Because Trout Creek is an intermittent stream, it spends much of its course underground. During high flows, water at the surface flows over the top of the streambed while much of the year the stream seems to have disappeared. The stream is still there, but flowing through stream alluvium and cracks below the surface. This underground flow protects a good part of the stream water from exposure to sun or warm air and keeps it very cold.

At this station, notice the small feeder stream that flows into Trout Creek. This stream flows down a steep canyon draw and is exposed to warm air and sunshine to a much greater extent than the water of Trout Creek. Consequently, it is much warmer. The warm water provides good growing conditions for the floating green carpet of vegetation, much of it water cress, often seen growing here.



STATION 5: CANYON WILDLIFE

Wildlife in Trout Creek Canyon ranges from the bushy-tailed wood rat (pack rat) to mule deer and black bear. Other larger animals



Bushy-tailed Wood Rat

such as mountain goats and elk stay high along the ridge of the canyon. You will be more likely to see the smaller creatures such as red or mountain pine squirrels, birds, and even fish in the stream.



Red-tailed Hawk

Look closely on the ground and shrubbery and you will be able to see many types of insects. Looking high overhead, you will often see red-tailed hawks, bald and golden eagles, turkey vultures and other soaring birds riding the winds high over the canyon. Look for song birds flitting through the forest undergrowth. You may also see a small dusky bird called a dipper bobbing up and down and foraging at the bottom of the stream.

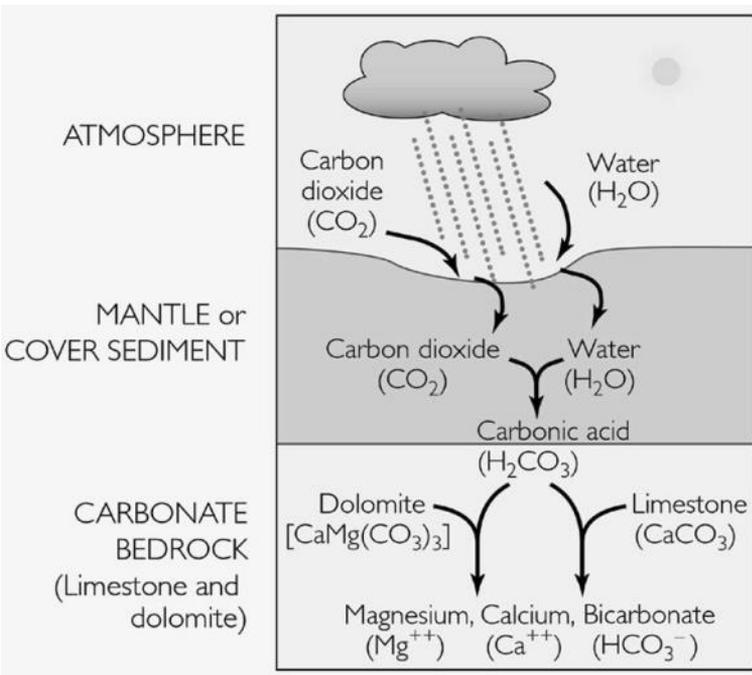


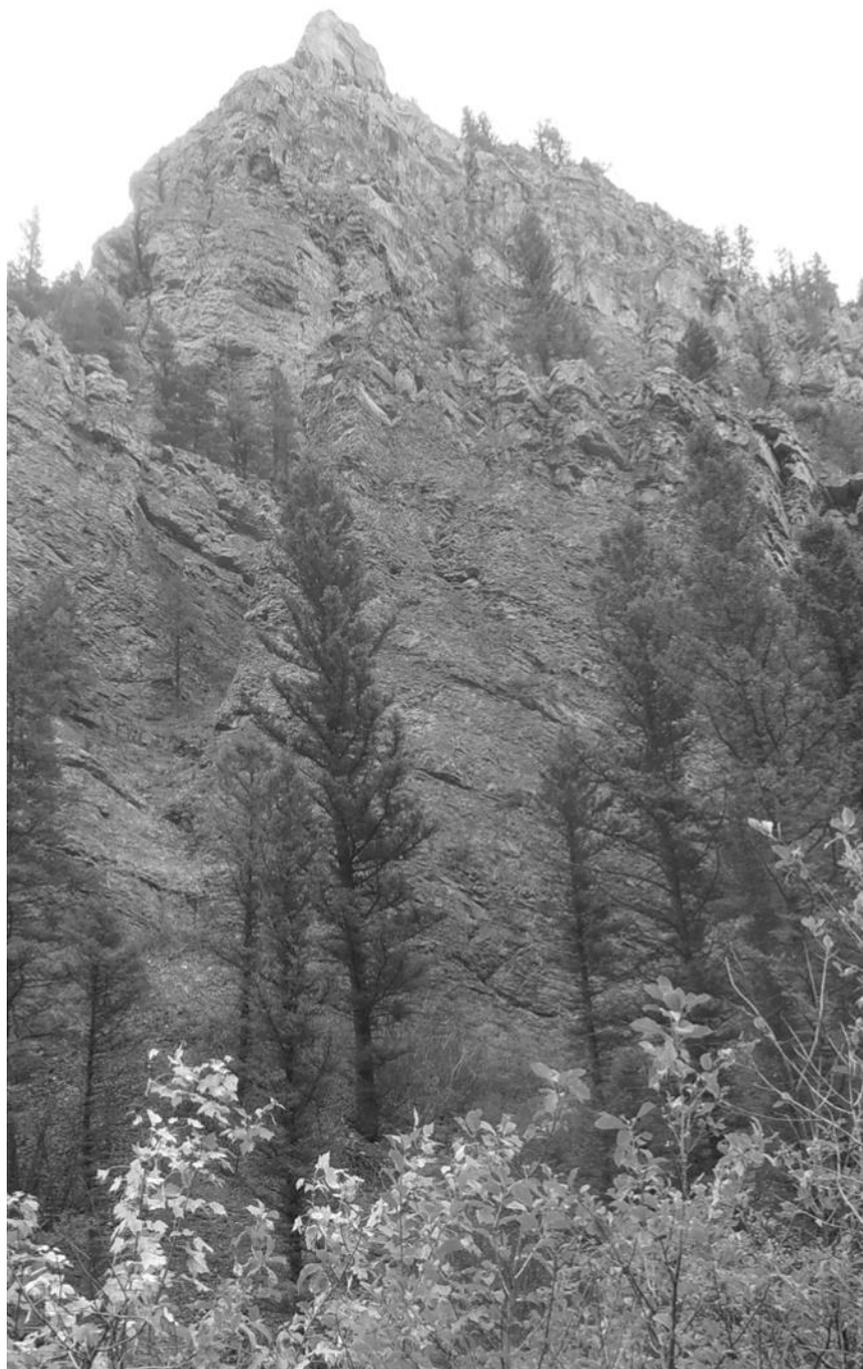
American Dipper

STATION 6: MORE GEOLOGY

The limestone canyon walls are composed principally of the mineral calcite, a combination of calcium, carbon, and oxygen (CaCO_3). As noted earlier, various impurities become embedded with the pure mineral giving different hues and shades to the rock.

Limestone is extremely reactive to acid. Gases in the air, including carbon dioxide (CO_2), readily dissolve in small water particles floating in the air, particles that can eventually become rain or snow. The CO_2 reacts with the water molecules forming a weak acid called carbonic acid. When it strikes limestone this weak acid will dissolve tiny bits of limestone. Over millions of years, this water seeps along cliffs and into cracks in the rock, dissolving rock in one place, and precipitating it in another. Along the surface, channels called flutes are cut on steep cliffs.





STATION 7: FLOODS

Trout Creek Canyon has had a long history of flooding. The first flooding of note since the US Forest Service built a road up the canyon was in the early 1950s. The road was repaired and washed out three more times in the following 30 years. A very large flood occurred in the spring of 1981, a flood of such magnitude it would be expected to happen only once in a hundred years. Spring rains fell on a large snowpack that year and contributed to widespread flooding in the Helena area. Draining a large mountain area as it does, the Trout Creek Canyon was hit hard with water rushing through the canyon at 717 cubic feet per second. Debris blocked the narrow canyon, causing pressure to build like a dam. On May 29, 1981 the dam broke causing extensive damage to the road.

Following an environmental analysis and the gathering of public comment, the Forest Service chose to close the road and manage as a non-motorized trail. As you walk the trail, you will see vestiges of the road as the trail passes along wide level stretches along the old route. You will also see places where the road has been cut by the creek with road segments abruptly stopping at a bank and starting up again a few hundred feet away. Several large, steel road culverts also remain lodged against trees and filled with gravel. Their condition gives testimony to the power of rushing water.

A diorama at the Helena Regional Airport commemorates the historical route through the canyon. Although you gain a much fuller appreciation of the splendor of the place with only the sky as a roof over your head and only the sounds of the stream, winds rustling through the trees and the calls of the critters of the canyon.



STATION 8: AN INTERMITTENT STREAM

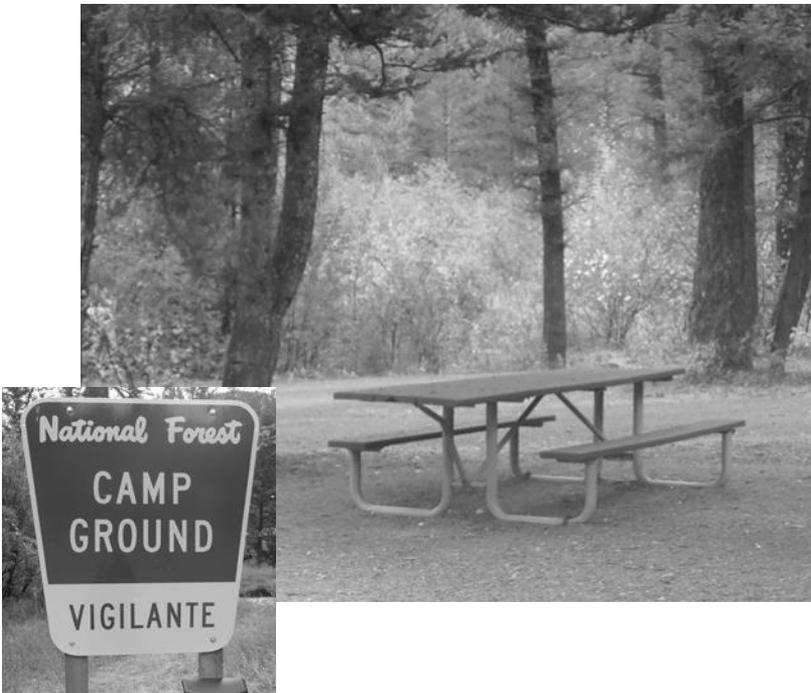
Depending on the time of year you visit the canyon, much or only a small amount of Trout Creek may seem to disappear from time to time. As you start your hike, the stream will usually be flowing well, but somewhere not too far up the canyon, the streambed will become dry. This is a sign of the porosity of the limestone and alluvium underneath the streambed. Water has eroded underground aqueducts in the limestone and also maintains a flow through the rocks and gravel deposited at the base of the canyon. When there is insufficient water to carry the water table above the surface of the streambed, the creek flows out of sight underground. From time to time the stream reappears and flows “normally.” Why it comes back to the surface is due to some combination of the rock base of the canyon being less porous and the alluvium thinner in those areas allowing the water table to reach the surface and the stream to flow in full view.



STATION 9: MICROCLIMATE

Trout Creek has its own microclimate, which means it is a small area with its own weather system. Due to the steep, narrow canyon walls, the sunlight only touches the canyon bottom for about an hour and a half during the summer time. In the winter, it gets even less sunshine. This means that the temperature in the canyon is 10 to 15 degrees cooler than outside the canyon.

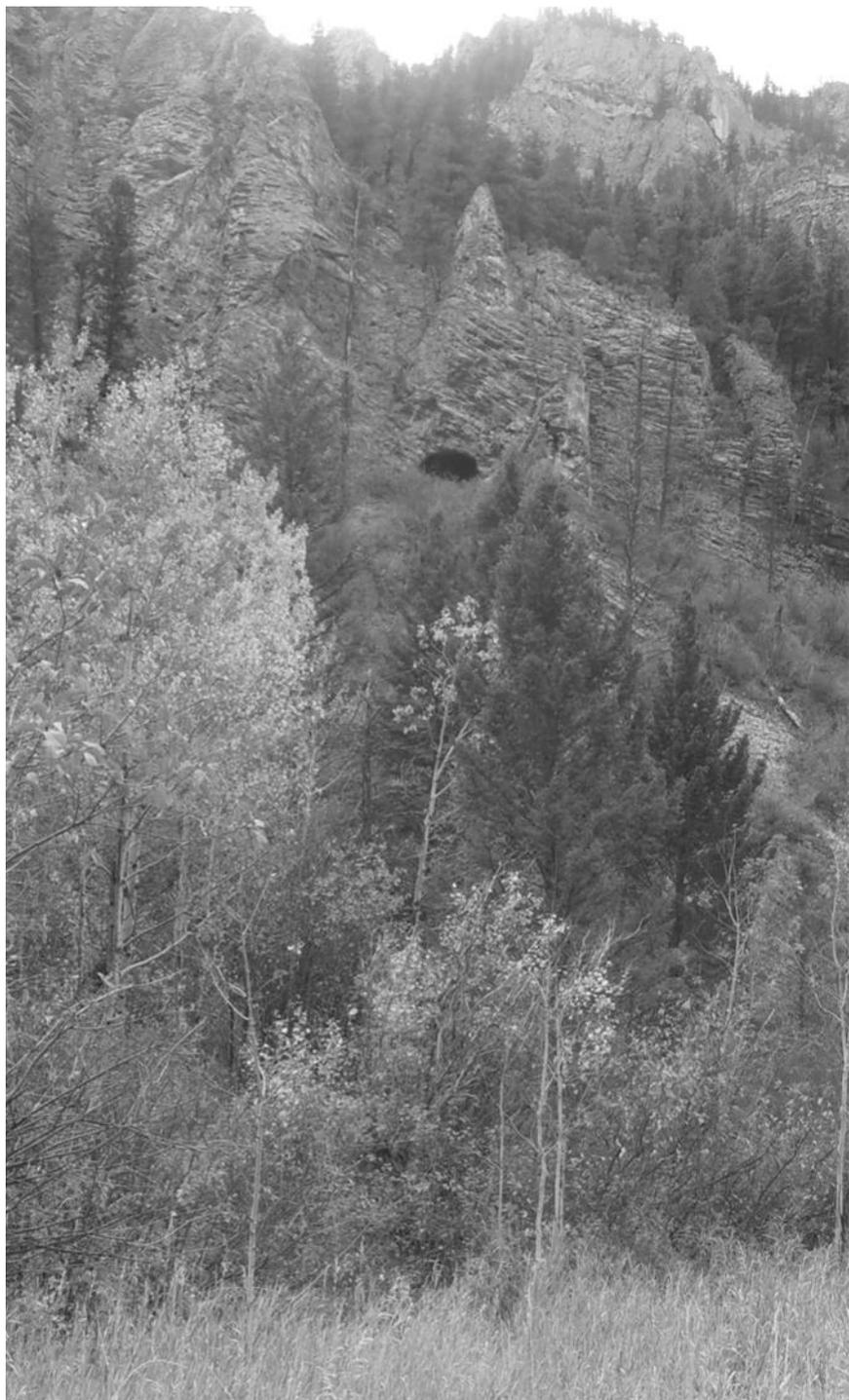
The west-facing wall gets more sunlight and is therefore dryer and hotter with very little vegetation. The east wall is cool and damp and covered with trees. At night, the air cools and a chilly breeze blows southward down the canyon. During the day, a warm breeze blows up toward the head of the canyon. Does this give you a clue why Vigilante Campground has been a popular summer refuge for Helena area residents since the early 20th century?



STATION 10: CAVES

While walking along the Trout Creek Canyon Trail, you will notice the caves found in the limestone walls. When it rains, this water mixed with CO₂ seeps through the cracks in the ground, which then dissolves the limestone and forms caverns in the ground until the cave openings become exposed. Most of the caves in the canyon are not very deep, measuring between 12-20 ft. deep, approximately 8-12 ft. tall and 8-13 ft. wide. The caves are home to bats and other small animals.





AFTERWORD

We hope this brochure has enhanced your enjoyment of the Trout Creek Interpretive Trail. Students at Helena High School, in association with the US Forest Service, produced the first edition of this brochure. The Montana Discovery Foundation and the US

Forest Service continue to revise and update brochure as needed.



As you return home, please feel free to keep this guide as a souvenir or return it to the kiosk, pass it on to a friend, or otherwise reuse or recycle. If you have questions or comments, please contact the Montana Discovery Foundation at 406.495.3711 or the Helena Ranger District at 406.449.5201.

Persons of any race, color, origin, sex, age, religion, or with any handicapping conditions are welcome to use and enjoy all facilities, programs, and services of the USDA. Discrimination in any form is strictly against agency policy and should be reported to the Secretary of Agriculture, Washington, DC 20250.

TROUT CREEK CANYON TRAIL #270

How to Get There:

Take county road #280 (otherwise known as York Road). Continue approximately 8 miles past York to Vigilante Campground. Parking for this trailhead is provided at the campground entrance.



2880 Skyway Drive
Helena MT 59602
406.495.5201



Montana
Discovery
Foundation