



Ridge / Geological Trail Interpretive Guide

Each number corresponds to a numbered post along the trail, which begins at the Stateline Overlook parking lot.

1. Ages Past

Here the Shawnee and Cherokee Indians stalked through an ancient, Chestnut dominated virgin forest and competed with natural predators for food. Their culture was adapted to the natural balance of the land. The arrival of the white man opened another chapter in the natural history of the area. Giant trees fell to his ax and the land was put under intensive cultivation for the first time. Eventually, the Indians, Black Bears, Wolves and Mountain Lions were driven from the area.

2. The Majestic Oaks

The Oak and Hickory Trees form the climax of a hardwood forest on ridge tops here. There are three major species of oak trees: the Chestnut Oaks, the Red Oaks and the White Oaks. By looking at the leaves, one can tell the difference between species. The Red Oak leaves have mostly spiny, pointed lobes and hair like bristles on the tips of the leaves. The lobes of the White Oak are smooth and rounded. The Red and White Oak can be seen here close to the trail. The Chestnut Oak leaves resemble the Chestnut leaves with a rounded, smooth tip or lobe. The Chestnut Oak can be seen on the drier rocky edges of ridges and cliffs.

3. Magnolias

Earleaf Magnolia is a relative of the Sweetbay Magnolia , a popular southern evergreen tree. In the spring, it bears large, fragrant, cream colored flowers. It is deciduous, losing its large leaves each fall. The tree got its common name from the lobes at the base of each leaf that resembles earlobes. Other Magnolias can be seen along the trail, such as the Cucumber Magnolia and the Umbrella Magnolia.

4. Mountain Laurel

To the mountain people, this is known as “ivy” and is sometimes called Spoonwood or Calico Bush. Indians made spoons and trowels from the wood of

the root. It is soft and easily worked when newly dug, becoming hard and smooth when dry. Calico Bush is so named because the blossoms were likened to dotted calico, as each individual cup-shaped flower, white or pale rose and less than an inch across, is faintly imprinted with purple dots. Dense thickets of Mountain Laurel bloom profusely throughout the park in the spring from late May to July. The evergreen leaves contain a poison called andromedotoxin which is fatal to livestock, but some forms of wildlife seem to be immune. Even the flowers are toxic, and honey that is made from the flowers of Rhododendron and Mountain Laurel is poisonous.

5. Rosebay Rhododendron

The mountain people call this “laurel”, and dense thickets are called “hell thickets”. The thick, dark green leaves of this shrub are characteristic of the Rhododendron. It is similar to Mountain Laurel, but is usually taller and its leaves are twice as large, from four to ten inches, as the Mountain Laurel.

In early summer, these shrubs give the park a festive air with their large blossoming heads of lavender, pink, and white flowers. Two types of Rhododendron are found in the park: the Rosebay, with its white-pink blooms from mid-June to Late July, and the less common Catawba, which displays its lavender and pink flowers from mid-May to mid-June.

The four to ten inch leaves are evergreen and poisonous, as they contain a cyanide compound. Like that of the Mountain Laurel, the hard wood can be used for making tools, handles and ornaments.

Rhododendron can be considered nature’s thermometers. The leaves droop in cold weather. At 32 degrees F. they curl under, the curl becoming tighter as the temperature falls.

6. Do you feel tired?

Perhaps a drink of Sassafras Tea will help. It was, and still is, used as a spring tonic by many mountain people. The Sassafras Tree can be identified easily. Its leaves have one, two or three lobes, but they differ widely in shape. The tree can reach a height of 50 feet, but this is uncommon. A dark berry-like fruit ripens in late summer and is eaten by bears, turkeys and many other species of birds. The wood is very rot resistant.

An oil extract from the root and bark has been used in the flavoring of certain candies and medicines, as well as perfuming soaps. The extract was

once used in making root beer, but research has shown that it contains a carcinogen and large quantities could be harmful.

7. Forest Recycling

The forest, with the many deciduous trees losing their leaves each fall, appears to become lifeless, yet each spring brings forth new life.

About 4,000 pounds of leaves, flowers, fruits, seeds, twigs, branches, whole trees and animal material may fall on one acre of the forest floor each year. This material may litter the forest floor for a time, but it does not pollute as man's litter does.

Fungi, insects, birds, mammals, water and other forces of nature, even the freezing and thawing of ice, help break it down—recycle it— as nutrients for developing plants and animals.

8. Changing Communities

Plants form communities. Different plants have different requirements for soils, moisture, temperature and amount of sunlight.

As you descend the hill, you are leaving the oak/ hickory community—which are common on dry, sunny ridges. When you enter the lower, wetter and shadier habitat on Laurel Branch, a different community of plants will greet you. The community includes Rhododendron, Eastern Hemlock, Basswood, Yellow Birch and Sugar Maple. Most of these trees are generally found in more northern climates.

9. Yellow Poplar Tree

A cousin of the Magnolia trees, the Yellow Poplar is known to some as the Tulip Tree because of its yellow-green and orange, tulip shaped blossoms. Even its wood is a yellow-green color. The Yellow Poplar are some of the largest broadleaf trees in the eastern United States, reaching a height of 200 feet under suitable conditions. It was one of the principal lumber trees of the area from the late 1890s to the 1930s.

Because the Yellow Poplar is so tall, straight and small limbed, it was frequently used for building log houses. As a light, strong and easily worked wood, it was in demand for ox yokes as well. Daniel Boone once made a 60 ft.

canoe from a Yellow Poplar Tree. Today it is used primarily for making paper, furniture, crates and boxes. In this area, it is put to use as shaft supports in coal mines.

10.Chestnut Log

This log is terrible evidence of the fatal disease which swept the country some 50 years ago, killing every American Chestnut Tree in its path. This deadly blight is caused by a parasitic fungus. The fungus spores enter the tree through wounds or insect damage in the bark and prove fatal in a very few, short years.

These trees were plentiful and in great demand at one time. The was tough, strong and straight grained, and was used for split rail fences, house timbers, house logs and railroad ties. The bark, peeled intact from a slender pole, made a good pipe for running water from a spring. Also, the nut crop was important to wildlife, livestock and people.

Today, sprouts may come up from some of the old Chestnut stumps and roots, but after ten years of growth, the new trees also die from the Blight. If you have seen a Chestnut Tree before, you may be able to recognize a sprout to the right of the trail here. Scientists have been working to develop a strain of Chestnut which can resist the fungus, but this achievement still lies in the future. This Chestnut log may be dead and seemingly useless, but through its decomposition it is still giving life back to the forest community.

11.Canyon Cliff

To the left of the trail is a 40 ft. mini-canyon. You will soon be at a lower level than the place now visible on the canyon floor.

12.Open Forest Floor

This opening in the forest is now clear, but it is being encroached upon by the surrounding shrubs and trees. Grasses, Blackberries and other plants that require more sun than what the forest offers are now found here. Eventually, neighboring trees and shrubs will shade out this open floor.

13. Rock Outcrop

Why do you think that the rock here is exposed? It is because its unusually hard consistency has resisted all the action of erosion, while softer materials around it have been blown or washed away. Even plants have difficulty getting into the tiny cracks.

The rocks you see here, and those you will see as you continue along the trail, are about 250–300 million years old, and the greater part of these are sandstone. This sandstone was formed by grains of sand cemented together by iron oxide compounds, then put under powerful pressure through geological actions over the ages.

14. Look Out

Look up the trail. Is there anything moving toward you? The many exposed rocks found on this section of the trail are moving! They will shift down-slope or disappear in a few thousand years, due to the action of water and abrasion.

15. Listen

Listen carefully to the sound of water in the stream that you are approaching. Can you tell from the sound which way the water is flowing? Hint: Look for an elevation difference too.

16. Hidden Spring

Can you hear the water flowing inside the rocks? This spring runs year-round and, in the early part of the year, it overflows and joins the branch to your right. As the summer progresses, the water table drops and the spring again flows only underground.

17. Cliff Overhang

Why does the cliff overhang at this place? Could the stream have undercut the rock and caused the overhanging section to be left behind?

Look for holes and pockets in the rock walls and ceiling. The most supported theory says that these pockets were formed from small, forceful eddies where the sand was deposited with the fill-in material falling out.

Cliff overhangs and rock houses like this one served as campsites for Native Americans hunting and traveling through the Breaks.

18.Cave

The opening in the rock across the stream is a small cave formed in the Sandstone by the action of water eroding away at the rock. It all began as a fracture in the rock that water was able to begin flowing into. Gradual erosion of the water caused the opening to expand and grow larger into the cave that you now see.

Caves like this provide shelter for a multitude of animal species such as insects, spiders, salamanders and bats.

19.Stubborn Tree

Notice how tenaciously this tree clings to the rock here. Many plants can grow in what seems to be poor locations because their basic needs are met: water, carbon dioxide, nutrients and light.

20.Rock Cross-bedding

Cross-bedding is caused by a fossilized sand bar among layers of sedimentary rock. The crossbedding seen here are the layers that lie at an angle to the main layers of stratified rock.

These were coastal (barrier) sand bars, not river sand bars, deposited when much of this area was under water. The current can be seen in the direction of fine lines and grooves of the cross-bedding. The angle points to the southwest, the direction of the longshore current.

21.Hemlock Tree

This is an evergreen tree which is sometimes known locally as the Hemlock Spruce or Spruce Pine. It likes an acid soil and grows profusely in the Breaks Region.

The Hemlock is remarkably tolerant to the shade of the forest understory which is caused by taller, larger trees towering above.

Recently, these large, magnificent trees have fallen victim to an invasive insect brought over from Asia known as the Hemlock Woolly Adelgid. This insect species is decimating the Hemlocks in North America and is now infecting the trees here at the Breaks. Through research and time we hope to find a long term cure for these trees so that they will be around for years to come.

This tree should not be confused with the source of Hemlock poison, which is derived from a small, herbaceous plant that likes sunny, moist areas and is related to the Wild Carrot.

22.Fossilized Log Jam

On the rock above this post, you can see the imprints of a Seedfern and of a Calamites (Horsetail Tree). It is believed that these trees were carried down current, formed a log jam, and were later covered by sand. These plants were deposited here during the Pennsylvanian Age, 250 million years ago.

23.One-Time Natural Arch

These boulders, the cliff, the bottom rocks and the large isolated boulder at one time probably formed a natural arch. The tremendous conical boulder at the bottom is larger than most of the log houses those often sheltered ten-child families in this area. There were other rocks extending out from the cliffs at earlier times, but nature's forces have worn these away.

24.Partridge Berry

This delicate plant is abundant in damp, forested regions. Its twin, white blossoms appear in the spring and are followed by tiny, red berries in the fall. Its glossy, evergreen leaves help identify them tiny, creeping plant.

The common name, Partridge Berry, implies that the scarlet fruits are relished by Partridges, or Ruffed Grouse, but they do not appear to be important to other wildlife.

Indians used this plant to make a tea used as a muscle relaxer. Because Indian women drank the tea as an aid in childbirth, it was called "Squaw Vine".

25. Faulting and Joints

Faulting is the movement along a break in the Earth's crust. It is a word too frequently used when referring to a fracture in a rock. The main fault of this area is the Pine Mountain Overthrust Fault, about 125 miles long, which forms Pine Mountain. The Russell Fork River basically follows another fault upriver from the canyon, called the Russell Fork Fault.

Joints and fractures have no motion. Faulting has no motion. Joints are most often seen in the interior of the Breaks area. You will notice that the layers on either side of this joint show no movement.

26. Quartz Rock Pebbles

The rock that you see here has white Quartz pebbles in the conglomerate sandstone rock. The nearest Quartz rock source is the Blue Ridge Mountain range. The Canadian Shield, farther to the north, is probably where these pebbles originated. Eons ago, there was a large inland sea here, and the Quartz rock was washed into the Breaks Region. By the time the Quartz had been washed as far as the Cumberland Mountains, it had been tossed and broken many times and had worn been worn smooth by its voyage through the swift water. Quartz pebbles like these can only be found where there were swift water currents, perhaps caused by a storm that was powerful enough to move them.

Much of the sandstone here was formed from Quartz that had been worn down into sand. In some places, small Quartz crystals can be seen in the rocks here at the Breaks.

27. Hanging Stone

At some time when the fractured rock shifted, a boulder was caught in the crack caused by the moving crevice. There is no danger of the rock falling as it is so tightly wedged in place that it cannot fall.

28. Coal Mining

Listen and you might hear the roar of a coal truck winding its way from a mine above Center Creek to Elkhorn City, Kentucky. The economy of the area around the Breaks is based on the mining of coal.

Below the sandstone that you have walked on today lies coal that was formed during the early Pennsylvanian period. The coal we mine and use today was built up from the giant plants and trees, beginning more than 250 million years ago. Each foot of coal is made up of five to eight feet of decaying plants which were compressed by layers of heavy sedimentary rock.

29.Lichens and Mosses

Has someone painted this rock? We certainly hope not. Luckily, the dark green color on the rock is not paint, but moss. These strangely shaped organisms growing here are lichens (like-ens). In the lichen, two plants, algae and fungi, are growing together. The fungi cling to the rock and retain moisture. The algae grow between the root like structures of the fungi and produce the food, from sunlight and water, which it shares with the fungi. Lichen is the first plant life to grow on the barren rock. Through chemical changes and weathering, they begin the slow process of soil formation. Some lichens, Rock Tripe, can be eaten as emergency food in survival situations.

30.Rock Formation– Stages of Development

First was the deposition of sediments, eroded from a large volcanic mountain range to the east, the present Blue Ridge, and to the north, the Canadian Shield, in a shallow inland sea. Sediments accumulated to a thickness of several thousand feet, especially near the base of the mountain range. This deposition took place over a period from about 570 to about 250 million years ago. The Great weight of overlying sediments and ground water dissolving and re-depositing minute quantities of mineral cemented the sediments into rock

Until recently, it was generally thought that the great weight of sediments somehow caused a buckling of the earth's crust, resulting in the uplift, folding and faulting that formed the mountains. More recent understanding of the movement of Earth's great tectonic plates (which carry the continents) indicate that mountain building resulted from the collision of plates carrying North America, Europe and Africa.

Since the mountains were built some 200–250 million years ago, the dominant geological processes have been erosion of material from the surface, and gentle uplift as the load has been lightened by removal of material by erosion. The mountain's uplift is similar to the buoyancy of an iceberg in water.

Besides this great fundamental force of uplift, many other forces of nature are continuously acting on the Breaks area. The results of these actions usually cannot be seen over the span of one human lifetime, but the unseen forces constantly grind deeper into Pine Mountain through the Russell Fork of the Big Sandy River, and the cliffs are gradually and invisibly rising or lowering in Breaks Interstate Park.