

## 7. Aspen

The grove of aspen before you is an old one, very different in appearance from the younger groves of aspen that are common throughout this forest. The black blemishes on these older trees are cankers caused by fungi. The rough bark at the base of these larger trees is the result of old age. Younger groves of aspen throughout the forest are commonly found in areas that have been disturbed by fire. Eager pioneers of these naturally cleared areas, aspen provide shade for the seedlings of other trees, like white fir, that will eventually displace them.

## 8. Ponderosa Pine

Fire plays a major role both in maintaining and altering the character of this forest. Large ponderosa pines have a thick bark that is resistant to all but the hottest of wildfires and may survive many generations of smaller fires. Many of the large trees seen here bear the scars of fires that damaged their bark, but did not kill them.

For many years the National Park Service (NPS) suppressed all fires until it became apparent that they are an important factor in the growth of these forests. In the 1960s the NPS adopted a policy that allowed some fires to burn, while they immediately suppressed those that threatened human life or structures. Today we recognize the importance of fire in maintaining the natural environments in our national parks while at the same time we acknowledge the threat that uncontrolled wildfires may present to life and property.

*Photo Top: Ancient reptile footprints in the Coconino Sandstone. NPS photo by Michael Quinn*



## 9. Ancient Reptiles

Yet another picture from the scrapbook of Grand Canyon's past tells of a vastly different environment. The Coconino Sandstone (the light-colored, cliff-forming unit evident several hundred feet below the rim) is made up of windblown sands, evidence of an arid environment very different from those in which the strata above or below it were deposited. The high-angle cross-bedding is the clue to its windblown origin, but a closer examination reveals the footprints of ancient reptiles that wandered these dunes long before the dinosaurs existed.

More than a layer of rock, the Coconino Sandstone is a vivid picture of ancient life in this region of the world at the end of the Paleozoic Era, some 270 million years ago.

## 10. The Largest Ponderosa

This is one of the largest ponderosa pines along the Widforss Trail—nearly 13 feet/4 meters in circumference. Trees like this are increasingly rare outside national parks because of their commercial value (ponderosa pine is one of the major lumber trees of western North America). A ponderosa of this size may be 300 to 500 years old. When this tree was a seedling, the environment of North America was very different. Humans had had little impact on the landscape.

## 11. Oak and Maple

The mighty oak of the eastern United States does not grow in this area of the American West, but its smaller cousins do. Scrub oaks (*Quercus gambelli*) have adapted to the dry western climate. These trees seldom grow to more than 15 to 20 feet/5 to 6 meters in height. The maples of the Grand Canyon region, also a scrub variety adapted to the more arid western climate, go unnoticed here except during the early weeks of fall when, like their cousins in the East, they turn bright red, giving a vivid splash of color to the slopes below the rim.

## 12. Lightning



This huge ponderosa pine was killed by lightning that struck it in 1988. The bolt rent the tree from top to bottom, creating the scar you see before you. An average of one out of every ten large ponderosas along the rim shows evidence of lightning strikes. Lightning is also a hazard to unwary (or unlucky) visitors.

**Stay away from the rim and open areas during storms!**

*Photo Above: A double strike of lightning, a frequent occurrence on the rim during storms. NPS photo by Bob Butterfield*

*Photo Far Right: Timeless view across The Transept of Brahma Temple (left) and Zoroaster Temple (right). NPS photo by Marc Sagan*

## 13. The Transept

You are standing at the head of The Transept which takes on truly grand proportions as it carves into the plateau. Far below you its gravel bed reveals the main course of erosion. More than likely you will not see water flowing in its bed; these streams flow only during times of heavy rain or flash floods. Yet the canyons they carve are nearly as deep as the Colorado River itself.

Time and the massive amount of water that comes from infrequent but powerful floods carve these tributary canyons. In the six-million-year history of Grand Canyon there must have been thousands of floods the likes of which we might see only once in a thousand years.

## 14. Sculptured Rocks

Landscapes change like the frames of a motion picture. Change is a part of this landscape. Rest awhile in this unique setting of rocks sculpted by nature.

The rate at which the landscapes of our earth change is accelerating as the changes brought about by humans become more profound. Many national parks were set aside to provide places in which the forces of nature remain the predominant agents of change. But even here the environment is subject to changes that result from increased visitation, decreasing air quality, and a host of other, more subtle changes. Only concerned and active citizens who care about protecting and preserving our natural environment can help decide what future pictures of Grand Canyon will look like.

The trail continues another 2½ miles/4 kilometers beyond this stop to Widforss Point.

Published by Grand Canyon National Park in cooperation with Grand Canyon Association. Written by NPS Staff; Tom Pittenger, NPS Editor; Faith Marcovecchio, GCA Project Editor; Ron Short, GCA Art Director. © Copyright 2001 Grand Canyon Association, Post Office Box 399, Grand Canyon, AZ 86023. Printed on recycled paper. ♻️



National Park Service  
U.S. Department of the Interior

Grand Canyon National Park  
Arizona



# Widforss Trail

# Widforss Trail

## Grand Canyon National Park



Widforss Trail follows the canyon rim for approximately 2½ miles/4 kilometers then heads into the forest to emerge at Widforss Point—a distance of 5 miles/8 kilometers one way (10 miles/16 kilometers round trip). This brochure is keyed to numbered stops along the first 2½ miles of trail, giving hikers a 5-mile round-trip self-guided hike along the most scenic portion of the trail.

Although shaded for much of the route, the trail can be hot: carry water with you. Take note of the altitude here: at 8,000 feet/2,500 meters above sea level, even the most relaxed stroll can be exhausting. Allow approximately two hours for the 5-mile round trip.

*Photo Above: Aspen forest of the North Rim. NPS photo*

*Photo Right: Gunnar Widforss painting in Grand Canyon, circa 1925. NPS photo*

The entire 10-mile round trip takes most people 4 to 5 hours. There are no restrooms or drinking water along the trail.

Gunnar Widforss, early twentieth-century artist, lived and painted at the Grand Canyon in the 1930s and produced a large collection of watercolors prized for their geologic detail. In his paintings Widforss captured the Grand Canyon environment as he saw it then. That environment has changed over the years, and natural and human forces continue to reshape the picture—a picture characterized by monumental change through the eons. The geologic features, plant life, and historic features along this trail all provide glimpses of these past and present environments—and future ones as well.

As you walk along the trail you may see wildlife at any time of day or year, including deer, bobcat, mountain lion, wild turkey, squirrel, coyote, porcupine, snakes (gopher and king), and lizards. If you see a large, dark squirrel with tufted ears and a bushy white tail, it is the Kaibab squirrel, native only to the Kaibab Plateau on the north side of the Colorado River.



## 1. Harvey Meadow

During the years Widforss painted, the meadow before you was used as a tourist camp and staging area for cross-canyon mule trips. Since that time the meadow has returned to its natural condition. On the far side of the meadow is a small doorway into a natural cave; this shelter was used by “Uncle Jim” Owens, game warden for the U.S. Forest Service at Grand Canyon in the early 1900s.



In those years the management of this land was vastly different from today; not all animals were protected by law. “Uncle Jim” Owens proudly boasted of having killed over 500 mountain lions in his effort to protect the deer population from predation. One unforeseen effect of this was the enormous growth of the deer population to levels that the forest could not sustain. The ultimate starvation of many thousands of these deer led to a realization of the role natural predators play in maintaining population size at a sustainable level.

*Photo Above: Jim Owens (center) with friends in Harvey Meadow, August 1913. NPS photo by William H. Claffin*

## 2. Fossils

The bedrock along the rim offers clues to environments of the distant past. The Kaibab Limestone beneath your feet was deposited some 250 million years ago in a shallow, warm inland sea. The accumulated remains of the plants and animals that thrived in this sea formed a layer of limestone 250 feet/80 meters thick. A startling glimpse of the past, the remains of these ocean-going creatures provide evidence of the shallow marine environment that existed here in the geologic past.

The small, white, disk-shaped fragments that are abundant in this layer are remains of invertebrates known as crinoids. Attached to the bottom of the sea, these creatures used petal-like arms to direct floating food particles into their mouths. The supporting stalk and arms were composed of dozens of these disk-shaped plates that, upon the death and disintegration of the animal, lay scattered upon the floor of the sea, preserved through millions of years into the fossils we see today.

## 3. Water

For most plant and animal communities the single most important requirement for survival is moisture. This sunny, dry slope is home to a grove of ponderosa pines, one of the most drought-resistant trees in the American West.

In the canyon below is Bright Angel Spring, which once supplied water to visitors and residents of the North Rim. Demand exceeded supply in the 1920s, and water was then brought up to the rim from Roaring Springs, 3,800 feet/1,200 meters below the rim, as it is today. In 1978 the drainage pattern in this area was altered by floods and resulting landslides, and Bright Angel Spring no longer flows.

## 4. North Rim Forests

In this moister region of the forest the trees include white fir, Englemann and blue spruce, and aspen. The north-facing slope of this valley allows protection from the sun, providing the cooler, moister environment in which these trees thrive.

## 5. Peak View

On the southern horizon stand the San Francisco Peaks. The highest of these, Mount Humphreys, is the tallest peak in Arizona (12,670 feet/3,862 meters above sea level). These mountains are part of the larger San Francisco volcanic field, active as recently as 1,000 years ago.

These mountains lie 70 miles/110 kilometers away by air, near the city of Flagstaff. In pre-industrial times it was possible to see individual trees on the mountain slopes from this vantage. Today the view is often obscured by haze from urban and industrial pollutants that are carried in from a variety of distant sources. In recent years visibility in this region of the country has deteriorated significantly, and views of these magnificent peaks may serve as a measure of the air quality on any given day.

The canyon directly below is a tributary to Bright Angel Canyon. These tributary canyons on the north side of the Colorado River carry more water than their counterparts on the south side and, as a result, are more deeply cut into the plateau. The greater elevation of the North Rim and the plateau's predominantly southward-dipping strata feed nearly twice as much runoff into the canyon as the South Rim. This intricate system of deeply cut side canyons sets the North Rim back farther from the Colorado River, isolates erosional remnants like Oza Butte and Zoroaster Temple, and gives the North Rim its characteristic look.

## 6. An Essential Facility

Directly across the side canyon, well hidden in the trees along the rim, is the North Rim sewage treatment facility. On most days a low whirring noise is evident from this direction. It is one of three major sewage treatment facilities at Grand Canyon National Park. Up to 100,000 gallons/380,000 liters of waste water flows daily into this plant.

Through a complex process of aeration, bacterial digestion, settling, and filtration, a non-toxic sludge and reclaimed water are produced. The sludge is transported to a landfill outside the park; the reclaimed water is used for many things, including watering the lawn at the lodge and fighting fires. Excess reclaimed water is returned to Bright Angel Creek via The Transept. The process is a costly one—both financially and to the environment, for it requires energy—but allows the North Rim to host upwards of a half million visitors each year.



*Photo Above: Aspen and ponderosa forest provides habitat for a variety of North Rim wildlife. NPS photo by Bob Butterfield*

