

A Changing Landscape: Naturally

The Devils Garden Trail leads you between sheer walls of sandstone fins, which may leave you wondering about how they were made. Simply put, vertical cracks in a thick layer of sandstone are being eroded and widened by water—scoured by runoff from rainfall and snow melt or pried and exfoliated by ice expansion.

We are fortunate to be here at this precise time in Earth's history, because these unusual stone formations may only last a few thousand years — not long at all in geologic time. The events that led to today's arches, fins, and other intriguing rock shapes began about 300 million years ago, when seas periodically covered this area. The seas became trapped in low-lying areas and then evaporated, leaving salt beds up to 5,000 feet thick in some places. Over subsequent millions of years, sand, silt, and clay accumulated on top of the salt deposits. The uneven weight and pressure of these overlying sediments squeezed the salt into what geologists call an anticline (a domed ridge). Overlying horizontal rock layers bulged upward and cracked vertically allowing rainwater to trickle down and dissolve the salt away.

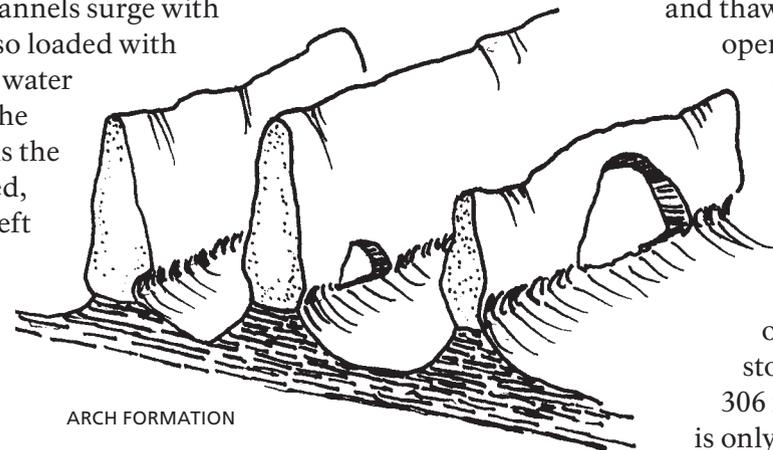
As the salt receded, the overlying rock burden sank with it. Arches' Salt Valley is an example of the resulting landform. At the edges of the valley, the cracked rock was slightly pulled apart. Rain and snow soaked into the vertical cracks, dissolving the cementing minerals and loosening grains of sand to be carried away by running water (the erosional power of



Landscape Arch in the 1950s. Oval indicates area from which rock fell in 1991. Compare this photograph with the slope under the arch today. Notice the numerous foot paths under the arch in the photo, caused by people walking off the trail. These "social trails" kill vegetation and invite erosion of the desert landscape. Since the trail under the arch has been closed, the vegetation is slowly recovering.

water is demonstrated during summer thunderstorms when the normally dry stream channels surge with raging water, so loaded with sediment that water and rock are the same color). As the cracks widened, tall fins were left standing.

In some instances, weak zones in fins are either



dissolved by naturally occurring acids in rainwater or wedged apart by freezing and thawing water, and openings develop. These openings evolve into the varied and splendid arches that capture our admiration.

Landscape Arch, one of the world's longest stone spans, stretches 306 feet (93 meters), yet is only about 11 feet (3.3

meters) thick at its center. It was almost five feet thicker until September 1991 when a few small pieces of the arch began to fall. Within seconds, a 60-foot-long (18-meter-long) slab of rock dropped from the underside of the arch's thinnest section. Some of the large boulders on the slope beneath the arch are remnants of this event.

As we peer through arch openings, we are reminded of the dynamic nature of our earth. Some of the sand beneath our feet could be majestic arches of long ago. In time, today's familiar arches, buttes and spires will rejoin the shifting sands and perhaps one day become the ingredients for another awe-inspiring landscape.



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Devils Garden

TRAIL GUIDE

ARCHES NATIONAL PARK

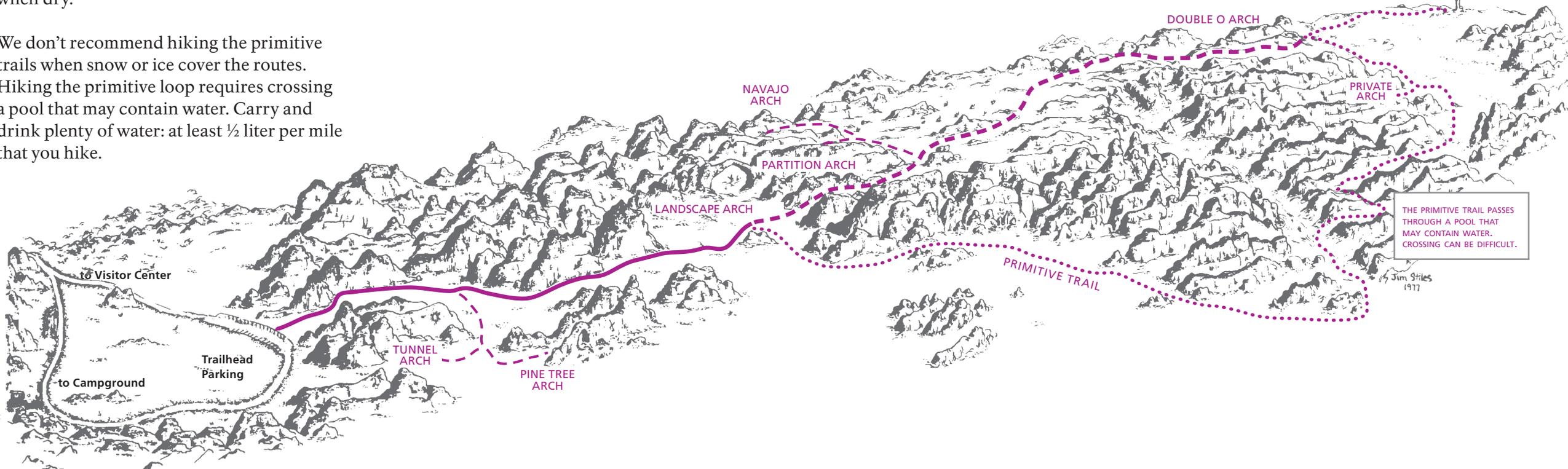
Trail Information



We have marked trails with small piles of rock called cairns. To avoid becoming lost, find the next cairn before continuing. Do not tamper with existing cairns, and do not build your own.

The first 0.8 mile (1.3 km) of the primary trail, which is graveled and well-graded, winds among the tall fins to a spectacular view of Landscape Arch. Beyond Landscape Arch, the trails become more challenging. Expect steep, sloping surfaces and close proximity to drop-offs. Sandstone is often called slickrock and can be slippery even when dry.

We don't recommend hiking the primitive trails when snow or ice cover the routes. Hiking the primitive loop requires crossing a pool that may contain water. Carry and drink plenty of water: at least ½ liter per mile that you hike.



Distances:

- Trailhead to Landscape Arch and back: 1.6 miles (2.6 km)
- Trailhead to Double O Arch and back: 4.2 miles (6.7 km)
- Trailhead to Dark Angel and back: 5.0 miles (8 km)
- Trailhead to Dark Angel and return via Primitive Loop: 5.9 miles (9.5 km)
- Trail to Pine Tree and Tunnel arches: add 0.5 miles (0.8 km)
- Trails to Navajo and Partition arches: add 0.8 miles (1.3 km)
- Total distance, all trails: 7.2 miles (11.5 km)

Please stay on the trail to protect the fragile desert soils and biological soil crusts.

A Changing Landscape: Not-So-Naturally

“Each and every one of us plays a part in the changes that ceaselessly work to maintain the balance of the Earth. . . Our individual contributions are tiny but the sum of all human activities is large.”

Your actions will help determine whether nature or people’s activity will be the primary cause of change here in Devils Garden. Park managers face the challenging task of preserving the parks from pressures of rapidly increasing numbers of visitors. They must also address the effects out-of-park developments have upon park resources. Your support and understanding of management policies are critical to their success, and your ideas for management strategies to deal with these impacts are always welcome!



The Hidden Garden

A huge garden grows in this part of the Southwest. It is a living crust that covers much of the soil of a 130,000-square-mile area. Biological soil crusts are made up of a community of tiny organisms: cyanobacteria, algae, moss, fungi, and lichen. These crusts are absolutely essential to the health of the desert ecosystem. They hold the grains of sandy soil together, retain moisture, and make nutrients available to vascular plants.

Biological soil crust needs five to ten years of undisturbed growth before it even becomes visible as an irregular, blackish mat on the soil surface. A single footprint left by a careless hiker can destroy decades of growth! Please stay on marked trails. If you must leave the trail, walk on bare rock or in dry streambeds. These are the only places you can walk without killing this vital resource.