

# The Transforming Power of Water

The Devils Garden Trail leads you between sheer sandstone walls, called fins, to discover arches and views not visible from the trailhead. The long geologic story behind this landscape testifies to the absolute power of water.

Stone arches may only last a few thousand years, but the events that led to their creation here 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 that were up to 5,000 feet (1,524 m) thick in some places.

Over the following millions of years, as nearby mountains eroded, layers of sand, silt, and clay accumulated on top of the salt deposits and became rock. The uneven weight and pressure of these overlying rock layers squeezed the salt into a domed ridge, what geologists call an anticline. Where rock bulged upward, vertical cracks formed that allowed rainwater to trickle down and, eventually, dissolve the salt away. As the salt receded, the overlying dome of rock collapsed. Arches' Salt Valley is an example of the resulting landform.

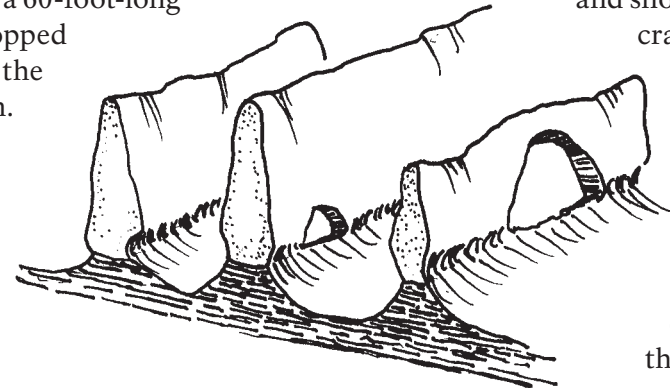
In some places, weak zones in fins may be dissolved by naturally occurring acids in rainwater or wedged apart by freezing and thawing water, and openings develop. These openings may evolve into the varied and splendid arches that capture our attention.

Landscape Arch, one of the world's longest stone spans, stretches 306 feet (93 m), yet is



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.

only about 11 feet (3.3 m) thick at its center. Arches can erode at any time, such as in September 1991 when a 60-foot-long (18 m) slab of rock dropped from the underside of the arch's thinnest section. Some of the large boulders on the slope beneath Landscape Arch are remnants of this event, and reminders why it is best not to linger too long beneath an arch.



ARCH FORMATION

The power of water to transform a landscape is still evident at Arches today. Rain and snow soak into vertical cracks, dissolving cementing minerals within the rock and loosening grains of sand. Running water carries this material away, most dramatically during summer thunderstorms, when normally dry streambeds surge toward the Colorado

River. The water is so loaded with sediment that it becomes the same color as the rocks. Where parallel cracks widen enough, tall fins of rock may remain standing between them, such as those at Devils Garden.

When we peer through arch openings or observe a distant thunderstorm, we are reminded of the dynamic nature of our Earth. Some of the sand beneath your feet could have been a majestic arch long ago. In time, today's familiar arches, buttes, and spires will return to shifting sand and perhaps one day become the ingredients for another awe-inspiring landscape.



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Quote from *The Dynamic Earth: An Introduction to Physical Geology*, by Brian J. Skinner and Stephen C. Porter, copyright 1989, 1992 by John Wiley & Sons, Inc. Used with permission.

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# Devils Garden

TRAIL GUIDE

ARCHES NATIONAL PARK

# Trail Information

**To Landscape Arch:** The trail is graveled and graded; it winds among tall fins to a spectacular view of Landscape Arch.

**From Landscape Arch to Double O Arch,** the trail becomes more difficult. Expect steep, sloping surfaces and close proximity to drop-offs. Sandstone is often called slickrock and can be slippery even when dry.

The **primitive trail** is most difficult. Expect difficult route finding, steep slopes, narrow drop-offs, and rock scrambling. Hiking the primitive loop requires crossing a pool that may contain water. We don't recommend hiking the primitive trail when snow or ice cover the routes.



We have marked trails with signs and piles of rock called cairns. Follow cairns to find your way. Do not tamper with existing cairns, and do not build your own.

## Distances:

- To Landscape Arch and back: ..... 1.6 miles (2.6 km)
- To Double O Arch and back: ..... 4.2 miles (6.7 km)
- To Dark Angel and back: ..... 5 miles (8 km)
- 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)

**Stay on the trail to protect fragile desert soils and biological soil crusts.**

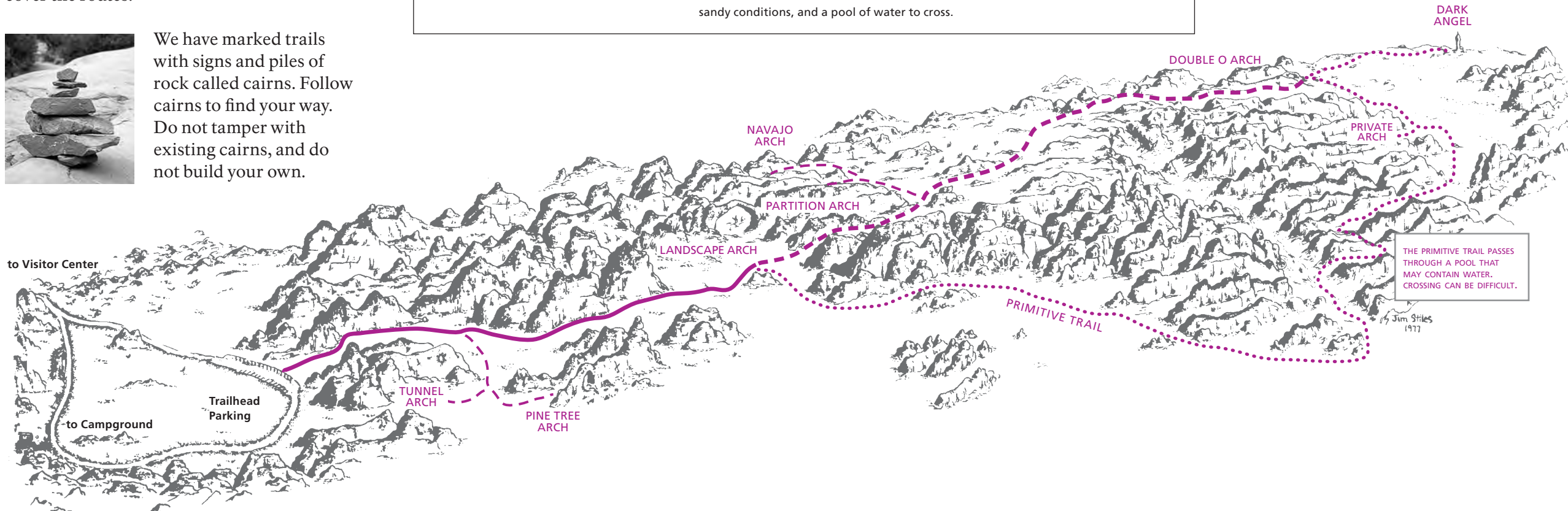
**Carry and drink plenty of water: at least 1 quart (1 L) for every two miles that you hike.**

# The Transforming Power of People

*“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.” -Brian J. Skinner and Stephen C. Porter*

Park managers face the challenging task of preserving the park from the impacts of rapidly increasing numbers of visitors. Your choices can make this task harder or easier. People who choose to help care for this special place (by walking only on trails, leaving no litter or graffiti, and respecting park regulations) are critical to its preservation for the enjoyment of future visitors.

	<b>Main trail to Landscape Arch (Easy)</b> —Trail is a hardened surface, with gently rolling hills.
	<b>Side trails to Pine Tree, Tunnel, Navajo, and Partition arches (Easy)</b> —Trails are hard packed with gravel, sand, or rock.
	<b>Main trail to Double O Arch (Difficult)</b> —Requires rock scrambling, climbing, and descending steep slopes near dropoffs.
	<b>Primitive trail (Most Difficult)</b> —Hikers should expect steep slopes, exposure to heights and dropoffs, rock scrambling, sandy conditions, and a pool of water to cross.



# 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 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, dark 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 damaging this vital resource.