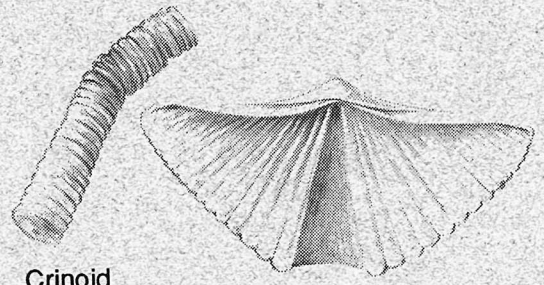
Viewpoint #3
Lower Little Spring Canyon
Gifts From the Sea

The lower gray and upper purplish layers of Little Spring Canyon contrast sharply with the red and white rock that dominates the Needles District. Yet both were derived chiefly from the same source -- the ocean. During a time when sea levels were higher, Canyonlands was a marine environment. The rock layers of Little Spring Canyon are predominantly limestone, a hard sedimentary rock composed mostly of calcium carbonate, which settled onto the ocean floor. Fossil remains of crinoids, brachiopods, and other marine invertebrates found within Little Spring Canyon give further testimony to the ocean's presence here.



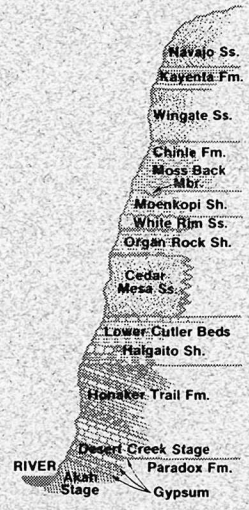
Crinoid

Brachiopod

Like today's coastal environment, beaches and sand dunes edged the prehistoric ocean. As waters receded to the west, sand left behind eventually became the white sandstone of the Needles District. Simultaneously, rivers flowing from mountain ranges to the east (the Uncompahgre Uplift) deposited red sediment. White ocean deposits and red river sediments interfingered in the Needles, creating today's colorful Cedar Mesa Sandstone.

Viewpoint #4
Big Spring Canyon
A Monumental Change

Rising one thousand feet higher above Big Spring Canyon is Grandview Point and Junction Butte. Both exhibit more of the stairstep topography characteristic of sedimentary rocks, with each layer deposited at a different time. The massive Wingate cliffs, the most prominent layer, were once enormous sand dunes hardened by quartz cement.



The Canyonlands region remained near sea level during the time these rock layers were being deposited. Change came when massive forces within the Earth began to push these layers upward (the Monument Uplift), causing the rock layers, which didn't bend, to fracture. Cracks and joints weakened the rocks, exposing them to erosion from water, wind and gravity. These forces, coupled with time, have molded the rocks into the spires and mushroom shapes of the Needles.

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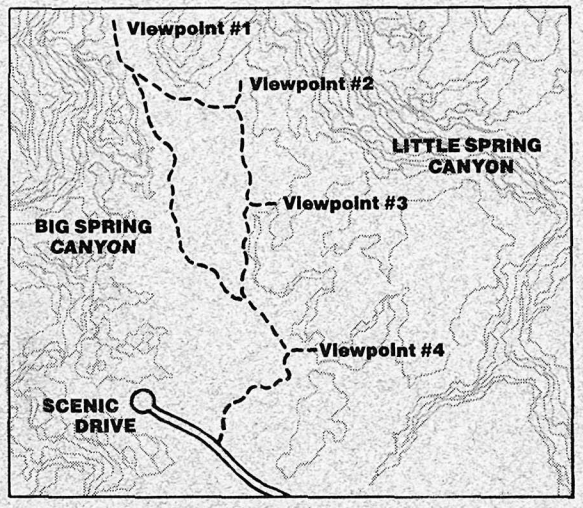
Slickrock Foot Trail

Trail Guide 2.4 mi

Needles District

Canyonlands
National Park

Illustrations: Teri Manning



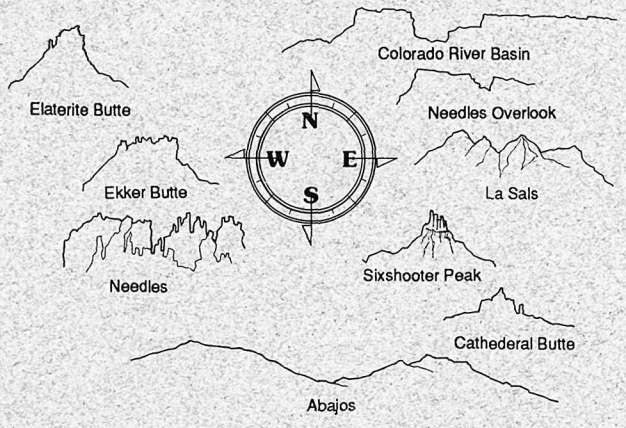
Slickrock Foot Trail
Length:
2.4 miles (3.8 km) roundtrip
Time:
2 1/2 -- 3 hours

Trail Considerations: The Slickrock Foot Trail provides an opportunity for beginners to orient themselves to trails in Canyonlands National Park. The trail is marked with cairns (small rock piles) spaced at intervals. Keep an eye out for cairns in the distance as you walk the trail and look for four side trails -- marked by small signs -- that lead to viewpoints. There are overlooks along the trail. Bicycles and pets are not allowed on the trail. Please report any Bighorn sheep sightings to a park ranger.

Slickrock, a general term for any bare rock surface, dominates much of the landscape in Canyonlands. Millions of years of natural forces have interacted to create the sweeping vistas and landmarks visible along this trail. Ironically, one of the dominant forces in shaping the landscape is now an intermittent feature of this semi-arid region. Can you guess what it is?

Viewpoint #1
Panorama
A Land Exposed

Geological landmarks are visible in every compass direction. The La Sal Mountains to the northeast and the Abajo Mountains to the southeast are igneous formations created when hot, molten rock, or magma, rose from the earth's interior. Unlike volcanic lava, which extrudes on the earth's surface, the magma slowly cooled and crystallized underneath layers of sandstone, shale and other rocks. Eventually the overlying layers eroded, exposing these igneous intrusions as our present-day mountains.



Dominating the rest of the scene is the stairstep topography of the canyon country: canyons, buttes, mesas and needles, composed of older sedimentary rock that resembles a layer cake. Unlike the fire-born mountains, wind and water were the conveyers of materials that, over a period of time, created the labyrinthic landscape of today. But the sculpture wasn't created overnight! Each step in the staircase represents a different chapter in geologic time.

Viewpoint #2
Upper Little Spring Canyon
Sculpting Forces

Water is often a scarce resource in the desert. Its appearance and disappearance has played a vital role in the canyon as we know it today. Although annual precipitation averages only nine inches per year, late summer flash flooding is common. Little Spring Canyon probably started as a trench. The erosive forces of flash floods, the alternate freezing and thawing of water within cracks and gravity's removal of weakened canyon rims were dominant forces that sculpted the canyon of today.

The sparse, open scene of Canyonlands owes much of its character to the lack of water. Juniper trees, cacti, soil crusts and a few other hardy plants have managed to survive and thrive in this semi-arid environment where many others cannot. A juniper or pinyon tree growing from a crevice in the rock displays a common means of establishment: taking advantage of an area that offers moisture and protection.