

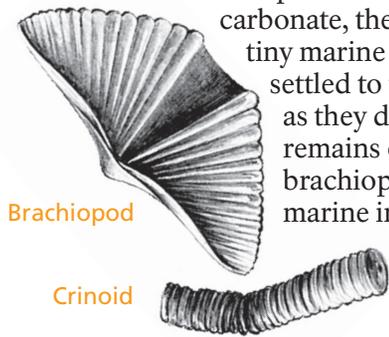
Viewpoint 3

Lower Little Spring Canyon

Gifts from the Sea

The gray and purple rock layers visible in Little Spring Canyon contrast sharply with the red and white rock that dominates most of The Needles district. Both, however, were derived from the same source — the ocean. Millions of years ago this area was covered by a shallow sea. Little Spring Canyon is pre-

dominately limestone, a hard sedimentary rock composed mostly of calcium carbonate, the hard parts of tiny marine animals that settled to the ocean floor as they died. Fossilized remains of crinoids, brachiopods and other marine invertebrates give testimony to the ocean's presence.



Brachiopod

Crinoid

The spires of The Needles district display the red-and-white banding of Cedar Mesa Sandstone, which was formed as sandy beaches and dunes repeatedly overlaid red sediments washed down from the mountainous Uncompahgre Uplift to the northeast.



National Park Service
U.S. Department of the Interior

Canyonlands National Park
2282 SW Resource Blvd.
Moab, UT 84532

Published by Canyonlands Natural History Association

Illustrations by Teri Manning

Printed on recycled paper

06/19 2.1m

EXPERIENCE YOUR AMERICA

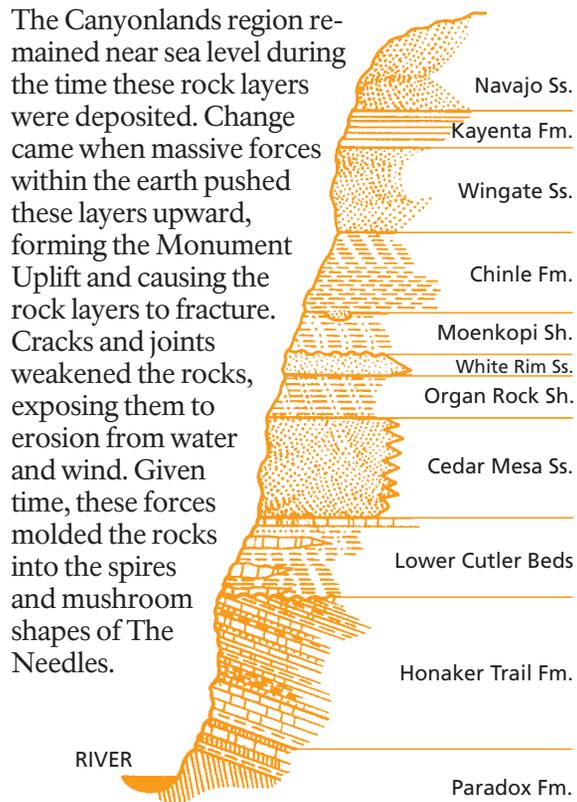
Viewpoint 4

Big Spring Canyon

A Monumental Change

Grand View Point and Junction Butte, rising a thousand feet above Big Spring Canyon, are visible to the north. These landmarks show erosional patterns typical of sedimentary rock. The various layers exhibit different degrees of resistance to weathering. Softer rocks, such as shales and mudstones, crumble into slopes. Sandstones, limestones and other harder rocks maintain vertical bluffs. The massive Wingate cliffs, the most prominent layer, were once enormous sand dunes.

The Canyonlands region remained near sea level during the time these rock layers were deposited. Change came when massive forces within the earth pushed these layers upward, forming the Monument Uplift and causing the rock layers to fracture. Cracks and joints weakened the rocks, exposing them to erosion from water and wind. Given time, these forces molded the rocks into the spires and mushroom shapes of The Needles.



LEGEND

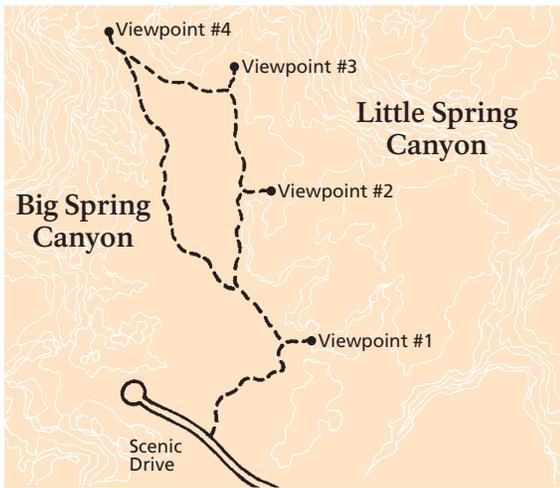
Fm. – Formation
Sh. – Shale
Ss. – Sandstone

Slickrock Foot Trail



2.4 miles (4 km) roundtrip
2.5 to 3 hours

NEEDLES DISTRICT
CANYONLANDS NATIONAL PARK



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. Bicycles and pets are not allowed on the trail.

Slickrock, a general term for any bare rock surface, dominates much of the landscape in Canyonlands. For millions of years, 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?

Please report any bighorn sheep sightings to a park ranger.

Viewpoint 1

Panorama

A Land Exposed

Geological landmarks are visible in every direction. The La Sal Mountains to the north-east and the Abajo Mountains to the southeast are igneous formations created when molten rock (magma) rose from the Earth's interior and slowly cooled and crystallized underneath layers of sandstone, shale, and other sedimentary rocks. Eventually the overlying layers eroded, exposing the igneous rock as our present-day mountains.

Dominating the rest of the scene is the stair-step topography of canyon country: canyons, buttes, mesas, and needles. Unlike the fire-born igneous mountains, these older sedimentary rocks were deposited by wind and water. Layer upon layer of sand, silt, clay, and gravel were laid down over geologic time. Following deposition of these sediments, water gradually eroded them into the formations visible today.



Viewpoint 2

Upper Little Spring Canyon

Sculpting Forces

Water has played a vital role in carving this canyon. Although precipitation in the park averages only nine inches per year, late summer flash flooding is common. The impact of swiftly moving, sediment-laden floodwaters as well as water alternately freezing and thawing within rock cracks has worked in conjunction with gravity to become the dominant sculpting force.

Water has also influenced the sparse, open character of this landscape. Juniper trees, cacti, soil crusts, and other plants with specialized adaptations have managed to survive and thrive in this semi-arid environment. Crevices in rock offer moisture and protection, and plants often take advantage of such favorable locations to become established.

