OUTSTANDING GEOLOGIC FEATURE OF PENNSYLVANIA

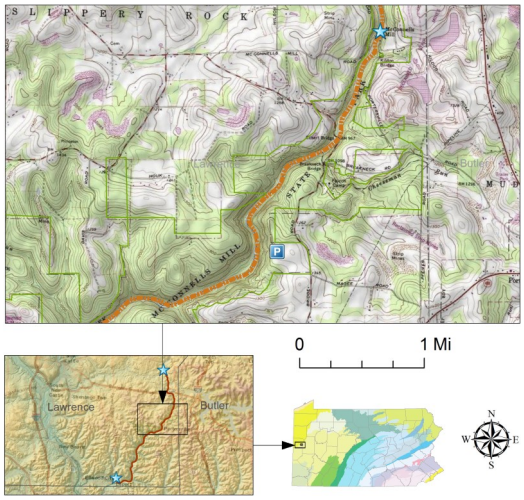
SLIPPERY ROCK CREEK GORGE, LAWRENCE COUNTY

Stuart O. Reese, 2016

Trail of Geology
16–101.0

Location

Lawrence Co., lat: 40.92705, lon: -80.18533 (parking); lat: 40.9528, lon: -80.1703 (bridge); Portersville, Zelienople, and Beaver Falls 7.5-minute quadrangles



Bedrock is Pennsylvanian age (approximately 320 million years old). The sequence of rock units from older to younger includes the Connoquenessing sandstone, Mercer Shale, and Homewood Sandstone (units in the Pottsville Formation), and the Clarion shale and sandstone, Vanport Limestone, and Kittanning shale and sandstone (units in the Allegheny Formation). The Homewood Sandstone, which is very resistant to erosion, is the most prominent bedrock in the gorge, forming cliffs along much of the gorge walls. The Vanport and Kittanning units create gentle slopes away from the rim of the gorge. Glacial erratics (relict boulders of rock types foreign to the area) are present around the gorge north of Cleland Rock.

Geology

Slippery Rock Creek Gorge winds for more than 12 miles, is over 400 feet deep, and has a relatively steep gradient. The gorge increases in depth from the south as well as the north to a maximum depth near Cleland Rock. It is noted for its many rocky cliffs, hanging valleys, and waterfalls, such as the Muddy Creek, Alpha, Kildoo, and Breakneck Falls.

The odd configuration and rugged character of the gorge results indirectly from glaciation. Glacial lakes, including the predecessor of Lake Arthur in Moraine State Park, formed and then rapidly drained through the gorge. Water from these glacier-dammed lakes breached the drainage divide near Cleland Rock between north-flowing and south-flowing preglacial streams and flowed through this valley. Subsequent floods and glacial outbursts deepened the combined gorge.

Slippery Rock Creek Gorge at McConnells Mill State Park.

Recommended Reading

Fleeger, G. M., Bushnell, K. O., and Watson, D. W., 2003, Moraine and McConnells Mill State Parks, Butler and Lawrence Counties—Glacial lakes and drainage changes, *with an addendum on* Muddy Creek oil field by Carter, K. M., and Sager, Kelly (2010): Pennsylvania Geological Survey, 4th ser., Trail of Geology 16–004.0, 18 p.

McConnells Mill State Park web page of DCNR.

Published by the Pennsylvania Geological Survey.

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