

OUTSTANDING GEOLOGIC FEATURE OF PENNSYLVANIA

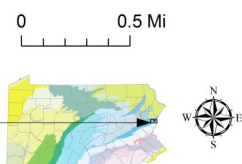
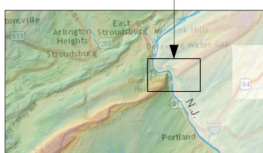
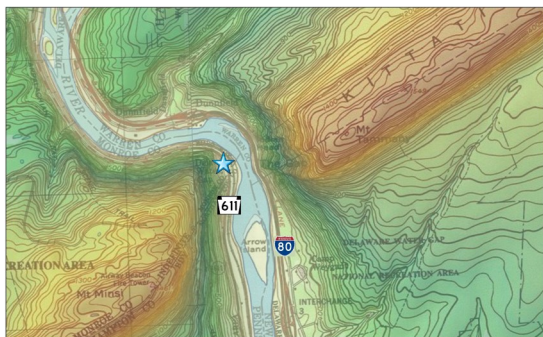
DELAWARE WATER GAP, MONROE COUNTY

Stuart O. Reese, 2016



Location

Delaware Water Gap National Recreation Area, Monroe Co.,
Delaware Water Gap Borough, lat: 40.9678, lon: -75.12196
(parking); Portland 7.5-minute quadrangle



The Delaware Water Gap as viewed from the west. Photograph by Gary Fleege, Pennsylvania Geological Survey.

Geology

The Delaware Water Gap is an impressive and scenic water gap cut by the Delaware River through Kittatinny Mountain. Massive gray conglomerate and sandstone of the Shawangunk Formation of Silurian age supports the ridges and forms cliffs. About 3,000 feet of rock is exposed in the gap including the Martinsburg, Shawangunk, and Bloomsburg Formations.

The Delaware Water Gap is famous for its depth, width, and scenic beauty. The water gap is a mile wide from New Jersey's Mount Tammany (elevation 1,527 feet) to Pennsylvania's Mount Minsi (elevation 1,463 feet.) The relief is about 1,200 feet from the tops of the mountains to the surface of the river, which is approximately 290 feet above sea level.

The origin of the gap, and water gaps in general, has been debated for many years. The water gap is thought to have formed in a zone of weakness in the rocks. Following the Alleghanian orogeny, which raised large mountains in the east some 300 to 250 million years ago, the landscape eroded and the surface-water divide moved westward. In a process called "headward erosion," the precursor to the Delaware River ultimately found a weak spot to cut through the sandstone of the Shawangunk Formation. Once through the gap, the stream captured other streams as its path lengthened to the northwest. The steeper stream gradients on the southeastern side of the mountains next to the gap is evidence of the headward-erosion process.

Wisconsinan glaciation also impacted the area. About 20,000 years ago, glaciers reached a point southwest of the gap. Their subsequent retreat back to the northeast included the development of glacial lakes. The lakes ultimately drained through the Delaware Water Gap, carving down even further into the bedrock.

Recommended Reading

Epstein, J. B., 2010, Teachers guide to geologic trails in Delaware Water Gap National Recreation Area, Pennsylvania-New Jersey, in Fleege, G. M., and Whitmeyer, S. J., eds., *The Mid-Atlantic Shore to the Appalachian Highlands—Field Trip Guidebook for the 2010 Joint Meeting of the Northeastern and Southeastern GSA Sections: Geological Society of America Field Guide 16*, p. 127–147.

National Park Service, 2010, [How the gap formed](#): National Park Service, 2 p.

[Delaware Water Gap National Recreation Area](#) web page of the National Park Service.

[Big Pocono State Park](#) web page of DCNR.

