

Appalachian National Scenic Trail
Georgia to Maine

National Park Service
U.S. Department of the Interior



Adventure Guide

For Teens

**The Appalachian Trail
in Delaware Water Gap
National Recreation Area**



Explore, Learn, Protect

Contents

Activity 1	The Making of Delaware Water Gap CAN BE DONE ANYWHERE Learn about the geologic history of Delaware Water Gap.	3
Activity 2	Take a Hike PLANNING CAN BE DONE ANYWHERE Hike up to Mt. Minsi.	5
Activity 3	The Wildlife CAN BE DONE ANYWHERE Learn about Delaware Water Gap's wildlife.	10
Activity 4	A Thru-Hikers Journey CAN BE DONE ANYWHERE Read a real A.T. thru-hiker's journal and answer questions.	12

Ready. Set. Hike...



Created in partnership with the Appalachian Trail Conservancy
with support from Unilever, National Park Foundation, and the Max
and Victoria Dreyfus Foundation, Inc.

Special thanks to Leigh Jenkins, Science Teacher, Berkley Springs High School,
and Graduate Student, Curriculum Development, Shepherd University.



The Making of Delaware Water Gap

The Delaware Water Gap is one of the most strikingly beautiful and geologically interesting features of the Appalachian Trail. The Delaware River, which runs in a northwest to southeast direction along the border between Pennsylvania and New Jersey, cuts across Kittatinny Ridge, which runs in a northeast to southwest direction from New York to Maryland. The ridge is part of the valley and ridge district of the Appalachian Highlands Region consisting of a series of folded rock running predominantly parallel to the east coast.

Delaware Water Gap National Recreation Area spans across the Delaware River and into two states — New Jersey and Pennsylvania. The recreation area is managed by the National Park Service and provides excellent recreational opportunities, such as canoeing, hiking and climbing. The Appalachian Trail runs through the recreation area for approximately 22 miles from New Jersey into Pennsylvania.

The Delaware Water Gap is all about Geology. So let's start out with a brief review.

Geological Time Scale

Remember the Geologic Time Scale? It divides geologic history into eons, eras, periods, and epochs.

The rocks we see at the Delaware Water Gap are primarily from the Silurian (408–438 million years ago) and the Devonian (350–408 million years ago) periods of time.

What era do these time periods fall within according to the geologic time scale?

Formation of the Appalachian Mountains

During the Paleozoic Era the site of the Appalachian Mountains was occupied by a Mediterranean sea in which sediments accumulated to a thickness of about 40,000 feet. The deposits were then folded due to plate tectonics and then uplifted due to changes beneath the earth's surface.

GEOLOGIC TIME SCALE

EON ERA	PERIOD	EPOCH	Present		
Phanerozoic	Cenozoic	Quaternary	Holocene	0.01	
			Pleistocene	1.6	
		Tertiary	Neogene	Pliocene	5.3
				Miocene	23.7
			Paleogene	Oligocene	36.6
				Eocene	57.8
	Mesozoic	Cretaceous	Paleocene	66.4	
				144	
				208	
		Triassic		245	
				286	
		Paleozoic	Permian		320
					360
			Carboniferous	Pennsylvanian	408
Mississippian	438				
Devonian	505				
Precambrian	Proterozoic	Silurian	570		
		Ordovician	2500		
	Archean		3800		
			4550		

(From Decade of North American Geology, 1982)

AGE IN MILLIONS OF YEARS BEFORE PRESENT

Plate Tectonics

The basic idea of **plate tectonics** is that the earth's surface is divided into a few large, thick plates that move very slowly either away from one another, past one another or toward one another. Related to the idea of plate tectonics is the concept of **continental drift**—the idea that continents move freely over the earth's surface, changing their positions relative to one another; and **sea-floor spreading**—the sea floor forms at the crest of the mid-ocean ridge and moves horizontally away from the ridge.



At the end of the Paleozoic Era, the Appalachian Mountains were probably high, rugged mountains rivaling the modern Alps. But a huge rift, or break in the earth's crust, occurred during the breakup of the super-continent Pangea. What is now Africa began to move away from what is now North America. Using the map below, can you identify the continents of Africa and North America?

During the 225 million years since the Paleozoic era, the uplifted formations have been subjected to weathering and erosion. These processes resulted in the erosion-resistant gray sandstone and “conglomerate” rock called the Shawangunk Formation that we see today. This rock forms the magnificent cliffs of the Delaware Water Gap.

Water Gaps: What Came First...The River or the Gap?

The Delaware River runs through this ridge and has carved a geologic feature known as a water gap. One theory is that streams and rivers of the area went through a process of “capturing”. The headwaters of the first river eroded their way north to the area of today's gap. Finding a fault in the rock, the headwaters worked their way through the ridge to the north side. There they “captured” the flow of the streams and rivers on the north side of the ridge, slowly eroding their way through the gap. At this time the Delaware River was hundreds of feet higher than today.

What is the definition of a water gap?

How would you describe the Delaware Water Gap for a new Appalachian Trail Guide?