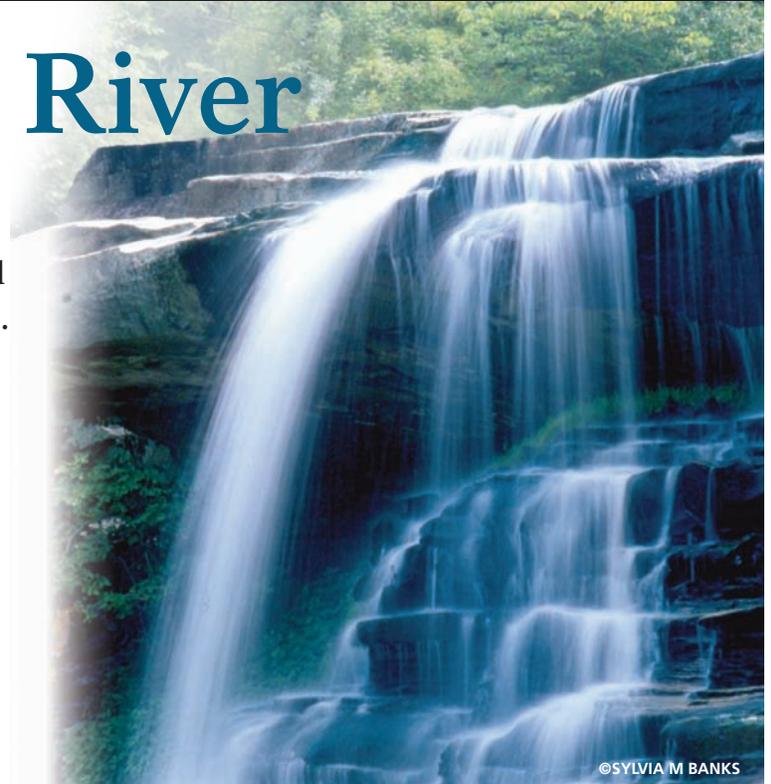




## Rock, Ice, and River

Bedrock, glaciers, and rushing rivers—geologic stories of a place do not involve one chapter. Instead multiple events have shaped and reshaped the land. By studying the modern landscape, we can trace the story of what happened.

The terrain of Cuyahoga Valley National Park (CVNP) is diverse and often rugged. River terraces, steep valley walls, meandering streams, ravines, waterfalls, and rock ledges all give texture to the valley. The geologic evidence found in these features tells of seas, glaciers, and rivers that have all left an imprint on the land.



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### Geographic Setting

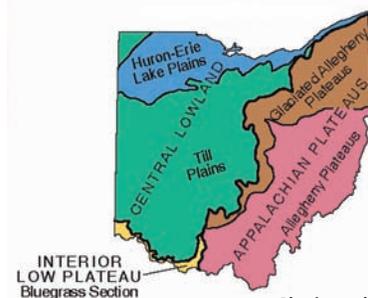


CVNP sits where two major regions of North America meet. Here, the final influences of Appalachian mountain-building give way to the vast plains. Most of CVNP falls on the Appalachian's Allegheny Plateaus; however, its northern tip crosses onto the plains.

The transition is not easily noticed in the park, but can be dramatic nearby. The Portage and Allegheny escarpments—broken lines of steep hills—mark the edge of the plateau

and offer striking views of Cleveland and Lake Erie.

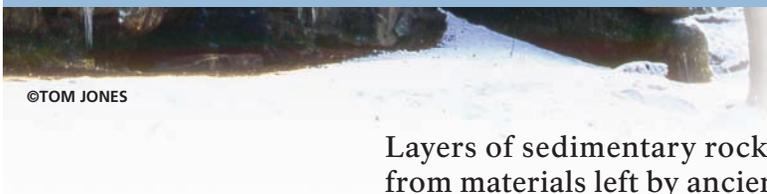
CVNP also sits near a north-south continental water divide, found south of the park in Akron. Rivers north of the divide flow to Lake Erie and the Atlantic Ocean. Rivers south of the divide flow to the Ohio River and the Gulf of Mexico.



INTERIOR LOW PLATEAU Bluegrass Section

Physiographic Regions of Ohio  
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### The Bedrock



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Layers of sedimentary rock, hardened from materials left by ancient seas and streams, create the park's bedrock. The oldest rocks rest at the bottom, with successively younger layers on top. Between 410 and 286 million years old, the bedrock dates from the Paleozoic Era.

CVNP's most common bedrock includes Bedford Shale, formed by sea deposits, and Berea Sandstone, probably created by slow-moving streams. They can be seen at Brandywine Falls, where the harder sandstone caps the waterfall. The highly textured Sharon Conglomerate, formed from sand and quartz pebbles carried here by ancient streams, crops out at the spectacular Ritchie Ledges.

### Ancient River Valley



©MARIANNE GNANDT

The Cuyahoga River is often credited for carving its namesake valley. Yet it was not the first river to sculpt the park's bedrock. Before glaciers buried its work, an ancestral river cut a deep valley near the current Cuyahoga Valley. This river flowed to the now extinct Erigan River,

an east-west river that mirrored the shore of Lake Erie's current location. The ancestral river system created a rugged landscape, similar to that now found in southeast Ohio beyond the reach of glacier's smoothing influence.

## Valley Under Ice

Two million to 10,000 years ago, an Ice Age gripped the planet. Four major ice advances moved like bulldozers pushing tons of sand, silt, clay, and rock. Glaciers here were too thin to scour the land. Instead they polished the ancient river valleys and filled them with deposits, burying features that had existed for thousands of years. Resistance from the Portage and Allegheny escarpments forced the glaciers to grind to a halt in northeast Ohio. This is recorded in linear piles of debris dropped by glaciers called end moraines. They mark the furthest advance of the glacial ice. Where glaciers encountered the escarpments, end

moraines took on unusual, contorted shapes unlike those seen in western Ohio.

Ice Age deposits had profound effects on CVNP's soils and ground water. Where melt water deposited sand and gravel, artesian waters can yield over 500 gallons per minute. Water gurgles in the artesian wells along the Ohio & Erie Canal Towpath Trail at the Jaite Mill. More commonly, clays derived from glacial deposits fostered soils devoid of groundwater. Finally, where ice or glacial debris dammed streams, Ice Age lakes left deposits that helped create the park's fertile soils found on river terraces.

## The Cuyahoga River

As glaciers retreated, the region's natural landscape began to take its modern form. The Erigan River Valley had lowlands where water could accumulate. A complex succession of great lakes filled the basin until Lake Erie took its current configuration less than 4,000 years ago. Rivers like the Cuyahoga re-carved valleys, sometimes following routes that align with the buried valleys, but sometimes finding less resistance from alternate routes.

Unlike other rivers north of the watershed divide, the Cuyahoga River initially flows away from Lake Erie. From its origins in Geauga County, it flows southwest until it encounters the north-south continental water divide in Akron where it makes an U-turn to the north, earning its nickname "Crooked River."



Glaciation Map  
COURTESY/OHIO DEPARTMENT  
OF NATURAL RESOURCES

In CVNP, the river's closely spaced ravines can drop nearly 600 feet in a few miles. Without vegetation, the ravines would resemble the intricately eroded badlands of the western United States. This rugged land stands out along the Buckeye, Salt Run, and Old Carriage trails.

## Legacy of Geology

The valley's carved topography fosters biological diversity. The uplands, dry valley slopes, moist ravines, and valley floor all support differing plants and animals. Cool, moist areas such as the Ritchie Ledges offer places where plants that grew here closer to the end of the Ice Age still survive. Being at the meeting point of two regions of the country adds to the diversity: species from both regions may be found in the park, although Appalachian species are more common.

The land also created opportunities and barriers for people. The Ohio & Erie Canal and Valley Railway took advantage of the natural corridor offered by the valley. But, it is the barriers that ultimately created the opportunity for CVNP. After World War II, suburbs began to dominate the land surrounding Cleveland and Akron. However, unstable soils and lack of ground water caused suburban development to largely bypass the valley, leaving the open space that has become a national park.



**Cuyahoga Valley  
National Park**

[www.nps.gov/cuva](http://www.nps.gov/cuva)  
[www.dayinthevalley.com](http://www.dayinthevalley.com)