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# Explore Harpers Ferry National Historical Park

# Harpers Ferry at a Glance

Harpers Ferry National Historical Park is located in West Virginia, Maryland, and Virginia, at the confluence of the Potomac and Shenandoah rivers. Its Visitor Center is located at 171 Shoreline Drive, Harpers Ferry, West Virginia 25425, off of US Route 340.  
[www.nps.gov/rocr/index.htm](http://www.nps.gov/rocr/index.htm)

Harpers Ferry National Historical Park is primarily known as a place to explore mid-nineteenth century American history and the events of the Civil War period. It also offers a favorite destination for birders, geologists, and all kinds of naturalists. Harpers Ferry is a great place to nature, history, and how they intersect in this beautiful and dramatic setting. You may want to simply stroll through the old town and its historical setting, or you may want to be more adventurous and set off on one of many trails which all conveniently intersect in the lower town, including the Appalachian Trail itself. Loudoun and Maryland Heights, both of which played prominent roles in the Civil War action around the town, are wonderful venues to enjoy nature, history, and dramatic views of the landscape.

The landscape includes captivating natural features—winding, rocky creeks, views of the rapids of the Potomac and Shenandoah rivers, rolling, fertile floodplains, hillsides draped with white oak trees, and languid wetlands in the beds of formerly bustling canals.

## Reading the Landscape

Harpers Ferry is a wonderful example about how geology, biology, and history inter-relate in the story of a place. No story about any one feature at Harpers Ferry is complete without understanding something about how each of these impacts all the others. Harpers Ferry’s obtained its place in history due to the placement of the U.S. Armory and Rifle Works here in 1799. It was located here because of the secure inland location, the abundant water supply and opportunities for power derived from it, and the vast oak forests for charcoal to power the furnaces and forges. The powerful waters brought productivity and prosperity, but also brought destruction in the form of repeated floods, including major ones in 1889, 1924, and 1936. The Armory and Rifle Works also brought John Brown and his small army of raiders here, as well as successive incursions of the Confederate and Union Armies during the Civil War.

The park is located at the confluence of two rivers, the junction of three states, and it spans two physiographic provinces, the Blue Ridge Mountains and the Ridge and Valley.

Let this website help weave together some of these stories and develop your ability to "read the landscape" at Harpers Ferry the way a skilled naturalist can read animal tracks. Explore the website and learn how plants and animals interact with each other and the physical setting to form recognizable [natural communities](http://www.explorenaturalcommunities.org/natural-communities).

Learn how humans have influenced those natural communities in the past, and continue to do so today—check out [Water & Land Use](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/stewardship-and-ecological-threats/water-and-land-use) in the Stewardship and Ecological Threats section.

Then... use the interactive  [Harpers Ferry Map Viewer](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/map) to plan a visit. Then armed with your newfound knowledge and skills, hit the trails and explore the natural communities of Harpers Ferry National Historical Park!

## The Origins of Harpers Ferry and the Park

Not long after the establishment of the United States as an independent nation, the site of Harpers Ferry was recognized as rugged place of great natural beauty. Thomas Jefferson commented after a 1783 visit that “The passage of the Patowmac through the Blue Ridge is perhaps one of the most stupendous scenes in Nature. You stand on a very high point of land. On your right comes up the Shenandoah, having ranged along the foot of the mountain a hundred miles to seek a vent. On your left approaches the Patowmac in quest of a passage also. In the moment of their junction they rush together against the mountain, rend it asunder and pass off to the sea.” In a further burst of enthusiasm, he declared that “This scene is worth a voyage across the Atlantic.” Today you can stand at “Jefferson Rock” and witness the view that inspired our third President.

But it was our first President’s interest in industry and commerce that determined the future of Harpers Ferry. George Washington knew the interior of the country from his service in the French and Indian War, and knew that its economic development was key to the future prosperity of the nation.

Being located at the junction of the Potomac and Shenandoah Rivers, it was a natural place for a transportation hub, where water and land transportation met. A ferry was operated here as early as 1747, by Robert Harper. Construction of the Armory and Arsenal began in 1799, and a bridge replaced the ferry in 1824. In the early 1830s, both the Chesapeake & Ohio Canal and the Baltimore & Ohio Railroad reached Harpers Ferry, and this began a boom period for the town, which was punctuated by a series of financial panics and brought to an end by the Civil War, which brought about the destruction of much of the town, as it was repeatedly occupied and abandoned by the warring armies. Fortunes revived after the war, but major floods in 1870, 1889, 1924, and 1936, as well as the Great Depression, prevented any lasting economic development.

In 1944, a Congressional Act provided for the establishment of a National Monument to commemorate the historic events that occurred at Harpers Ferry, and to provide a venue for the preservation of relics of archaeological and historic significance. Its original size was not to exceed 1500 acres. Later acts increased the acreage, and the State of Maryland donated several important Civil War sites. By 2004, the authorized acreage had been expanded to 3,745. It includes forested mountains and hillslopes, the historic town, open agricultural fields, wetlands, and riparian areas.

Today, Harpers Ferry remains a crossroads of transportation, with US Highway 340 and the railroad tracks of the CSX Corporation (formerly the Baltimore & Ohio Railroad), as well as the Appalachian National Scenic Trail (ANST) passing through or near the town. The Chesapeake and Ohio National Park also intersects with Harpers Ferry National Historical Park. The National Park Service at Harpers Ferry works with a number of private, local, state, and federal government entities to manage park resources consistent with its mission.

# Natural History of Harpers Ferry

## Native Plants

## Native Animals

### Commonly Seen Animals (list from NPSpecies)

|  |  |
| --- | --- |
| *Odocoileus virginianus* | white-tailed deer, White-tailed Deer |
| *Urocyon cinereoargenteus* | common gray fox, Gray Fox |
| *Vulpes vulpes* | Red Fox |
| *Mustela frenata* | Long-tailed Weasel |
| *Procyon lotor* | common raccoon, northern raccoon, Raccoon |
| *Eptesicus fuscus* | big brown bat, Big Brown Bat |
| *Lasiurus borealis* | eastern red bat, Eastern Red Bat, red bat |
| *Lasiurus cinereus* | hoary bat, Hoary Bat |
| *Myotis lucifugus* | little brown bat, little brown myotis, Little Brown Myotis |
| *Myotis septentrionalis* | northern long-eared bat, northern myotis, Northern Myotis |
| *Pipistrellus subflavus* | Eastern Pipistrelle |
| *Didelphis virginiana* | Common Opossum |
| *Sylvilagus floridanus* | Eastern Cottontail |
| *Clethrionomys gapperi* | Southern Red-backed Vole |
| *Microtus pinetorum* | Pine Vole, Woodland Vole |
| *Neotoma magister* | Allegheny Woodrat, Appalachian Woodrat |
| *Ondatra zibethicus* | Common Muskrat, Muskbeaver, Muskrat |
| *Peromyscus leucopus* | White-footed Deermouse, White-footed Mouse |
| *Mus musculus* | House Mouse |
| *Glaucomys volans* | Southern Flying Squirrel |
| *Sciurus carolinensis* | Eastern Gray Squirrel, gray squirrel |
| *Tamias striatus* | Eastern Chipmunk |
| *Blarina brevicauda* | mole shrew, Northern Short-tailed Shrew, short-tailed shrew |
| *Cryptotis parva* | bee shrew, Least Shrew, little short-tailed shrew, North American Least Shrew, small short-tailed shrew |
| *Sorex fumeus* | smokey shrew, Smoky Shrew |
| *Sorex longirostris* | Southeastern Shrew |
| *Scalopus aquaticus* | Eastern Mole, topos |

### Species found at the park (Wong):

**Scientific name Common name**

Blarina brevicauda Northern short-tailed shrew

Cryptotis parva Least shrew

Sorex fumeus Smoky shrew

Sorex longirostris Southeastern shrew

Glaucomys volans Southern flying squirrel

Clethrionomys gapperi Red-backed vole

Microtus pinetorum Pine vole

Mus musculus House mouse

Peromyscus leucopus White-footed mouse

Sciurus carolinensis Eastern gray squirrel

Tamias striatus Eastern chipmunk

Neotoma magister Eastern woodrat

Procyon lotor Raccoon

Vulpes vulpes Red fox

Odocoileus virginianus White-tailed deer

## Physical Setting

The physical setting of Harpers Ferry is fundamentally shaped by its rocks, earth, and water. Its location at the confluence of two major rivers means that water has shaped its landforms in dramatic ways, and that the periodic flooding that occurs here have shaped both its historic destiny and the structure and function of its vegetation types.

The Park's physical setting and its climate supports a diversity of plants and [natural communities](http://www.explorenaturalcommunities.org/glossary/term/23). Abiotic (non-living) factors—including climate, [soils](http://www.explorenaturalcommunities.org/glossary/term/205), geology, [topography](http://www.explorenaturalcommunities.org/glossary/term/222), and watersheds—work together to create different habitats that suit different plants. It is not a one-sided relationship; plants also affect the physical setting. See [Natural Processes](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/natural-processes) for more about the physical interactions among and between abiotic and living components.

### Interactions Among Different Aspects of Physical Setting

Although the subject of physical setting can be broken up into climate, soils, geology, topography, and watersheds, none of these factors exists independently of the others. Together they determine the shape and character of the landscape.

Soils, geology, and topography are especially tightly interwoven. For example, the underlying geology, for example whether rocks are harder or softer, and their type of mineral composition, has a major influence on the topography (shape of the landscape), as well as on the chemistry and other properties of soils. In turn, the steep topography at Harpers Ferry creates opportunity for [slope processes](http://www.explorenaturalcommunities.org/glossary/term/203) that transport [sediment](http://www.explorenaturalcommunities.org/glossary/term/187) downslope and cause many hillsides to be blanketed with a thick layer of gravel (called [colluvium](http://www.explorenaturalcommunities.org/glossary/term/53)) whose chemical properties may differ from the underlying [bedrock](http://www.explorenaturalcommunities.org/glossary/term/38).

Precipitation and wind—the agents of climate and weather—also help sculpt the landscape, and the shape of the landscape creates [microclimates](http://www.explorenaturalcommunities.org/glossary/term/141). Shaded lower slopes may favor plants like [American basswood](http://www.explorenaturalcommunities.org/species/ELEMENT_GLOBAL.2.139458), northern red oak, and [wild hydrangea](http://www.explorenaturalcommunities.org/species/ELEMENT_GLOBAL.2.134902)—plants that are more common at higher elevations or northern latitudes of the United States, while warmer and drier upper slopes favor chestnut oak or scarlet oak. (For more on microclimates, see [Topography](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/physical-setting/topography).)

The interaction of topography, climate, geology, soils, and water at Harpers Ferry leads to a wide spectrum of possible environments and habitats, which helps explain why the park contains a diverse suite of plants and natural communities.

### Climate of Harpers Ferry

Climate is one of the most important factors influencing general vegetation patterns—whether those climate trends are broad-scale, extending across large parts of continents, or very local [*microclimates*](http://www.explorenaturalcommunities.org/glossary/term/141), varying within a single valley.

#### Climate Overview [from HAFE-NPS]

[Wong+NPS] Harpers Ferry is located in a transitional zone between the more maritime climate of the Atlantic Slope and the drier areas of the Allegheny Mountains. The climate experienced here is characterized by large seasonal temperature differences, but is somewhat tempered by the nearby marine influence. The somewhat sheltered position of the park is only occasionally affected by Atlantic coastal storms and the area is prone to a precipitation deficit and periods of drought. Prolonged periods of drought have been known to occur, and summers are often characterized by dry spells that are punctuated by extreme weather events such as thunderstorms and hail storms. The area averages 35-40 thunderstorms per year, mostly during the summer months.

The annual average temperature in the region is 63 degrees Fahrenheit, with July being the hottest month. The summers are warm, humid, and stormy, with temperatures occasionally exceeding 100 degrees and averaging 82 degrees. The temperature here reaches 90 degrees F or higher at least 30 days each year and humidity can be oppressive when maritime air penetrates inland from coastal areas.

The average annual low temperature here is 40 degrees F, with January being the coldest month. Winter temperatures have been documented to drop down to 0 degrees, but the season is generally more moderate with an average seasonal temperature of 27 degrees F. and alternating between freezing (cold and storming) and thawing (fair and warming) weather. Once every 25 years an extreme annual low of -11 degrees F is expected. Fall and spring temperatures average in the mid-50s.

Average annual precipitation in this area is 38 inches, with June receiving the most precipitation and February receiving the least. Included in this figure is the average annual snowfall of 20 to 25 inches. Although Harpers Ferry is generally protected from most eastward-moving storm systems, it is frequently affected by Atlantic coastal storms. An average of 35 to 40 thunderstorms occur in this area every year, with the most common months of occurrence being June, July, and August. Rain showers are often common throughout the year. Summer droughts occur here on average every 4 or 5 years, damaging crops more severely than the more common fall droughts.

Cloud cover in the Park is greatest during the winter and the least during the summer. The annual precipitation averages 39.5 inches, with approximately equal amounts falling during the spring, summer, and fall, and slightly less falling during the winter. Average winter snowfall varies widely, but typically ranges from 20-25 inches.

The average frost-free period is 164 days, but a temperature of 32 degrees F or lower has occurred as late as May 24th and as early as September 11th.

The relative humidity for the Park is high, with an annual average of 70 percent. During the spring season, the average humidity hovers around 67 percent; during the fall, the relative humidity averages around 71 percent. At HAFE, the wind typically blows N-NW and annual wind speed averages 9 miles per hour (mph). April is the windiest month, with speeds over 5 miles an hour occurring 56% of the time. Thunderstorms have been known to generate wind bursts peaking at 77 mph

During the summer and winter months, the region is subject to intense storms that can bring significant amounts of precipitation. A large precipitation event at the Park can trigger catastrophic occurrences such as rockslides and/or mudslides and flooding. The Potomac and Shenandoah have incised steep cliffs in the topography surrounding the rivers’ confluence, creating ideal conditions (i.e., unstable steeps and confined river channels) for weather-related disasters.

In particular, flooding of the Potomac and Shenandoah Rivers occurs on a regular basis. According to the United States Geological Survey, a flood over 20 feet may occur at Harpers Ferry every 5 to 10 years. The record flood of 1936 flood reached a record height of 36.5 feet. A flood of this magnitude is estimated to occur every 125 years. Floods here are typically fairly deep, as once the water overflows its banks, there is not much room for it to spread out. Heavy precipitation typically produces rapid runoff, especially during the winter months, and this is a main cause of floods.

For information about microclimates in Harpers Ferry, see the [Topography](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/physical-setting/topography) section.

#### Severe Weather

Severe weather shapes the landscape and vegetation of Harpers Ferry. Tornadoes are infrequent. However, commonplace summer thunderstorms can bring high winds and torrential rains that cause flooding and severe erosion. Strong windstorms of any kind have the potential to uproot entire trees, especially in shallow-soiled parts of the park’s landscape.

Late summer or fall hurricanes are rare, having often weakened by the time they reach this far inland. Occasional winter storms such as “nor'easters” can bring intense cold winds and freezing precipitation.[1](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/physical-setting/climate#footnote1_jxrau78) The limbs and tops of trees bend and can break under the weight of accumulated snow and ice.

Trees also may suffer from periods of drought, which can occur at Harpers Ferry. Prolonged periods of drought have been known to occur, and summers are often characterized by dry spells that are punctuated by extreme weather events such as thunderstorms and hail storms.

Changes to regional and global climate continue to emerge as a major threat to the continued survival of many species and the [natural communities](http://www.explorenaturalcommunities.org/glossary/term/23) of which they are a part. Scientists are currently trying to understand the ecological implications of near- and long-term changes. While the scope and severity of the impact on the plants and animals of Harpers Ferry are unknown, climate change is certain to affect the relative health and vigor of the natural communities at Harpers Ferry in the future. For more information, see [Climate and Weather (Stewardship and Ecological Threats)](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/stewardship-and-ecological-threats/climate-and-weather).

### Soils of Harpers Ferry

[Soils](http://www.explorenaturalcommunities.org/glossary/term/205) provide plants with a place to sink their roots and a source of moisture and [nutrients](http://www.explorenaturalcommunities.org/glossary/term/158). In Rock Creek Park, as everywhere, different types of soils support different types of plants. Knowing something about the soil in a place helps you predict what [natural communities](http://www.explorenaturalcommunities.org/glossary/term/23) you might find there.

#### **Explore this page**

* [Mineral Soils](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/physical-setting/soils#Mineral%20Soils)
* [Acidic vs. Basic, Infertile vs. Fertile](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/physical-setting/soils#Acidic%20vs%20Basic)
* [Strongly Acidic Soils in Rock Creek Park](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/physical-setting/soils#Strongly%20acidic)
* [Less Acidic Soils in Rock Creek Park](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/physical-setting/soils#Less%20acidic)
* [Named Soil Series in Rock Creek Park](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/physical-setting/soils#Soil%20series)

#### Mineral Soils

Most of Harpers Ferry’s natural communities grow in mineral soils weathered from bedrock—this is mostly acidic bedrock, but some of it is more basic. (See Geology of Harpers Ferry). The higher ridges are harder rocks, in most cases crystalline and acidic. Some lower elevation rocks (phyllite/shale) are less acidic, and some rocks in the western part of the park, like the Murphy Farm, are actually limestone which is much less acidic.

#### Soil erosion and other issues (from Wong)

The soil horizons on much of Park lands were disrupted during the deforestation in the 19th and early 20th centuries. Soil formation in the Park has also been disrupted by agriculture and anthropogenic development (e.g., building and road construction). The organic matter in the soils is poorly developed and slowly reforming.

In some areas of the Park, soils are especially subject to erosion. The highland forested steeps are well-vegetated and not particularly conducive to erosion. The steep, rocky areas of the Park that have been denuded and developed, however, are subject to rock weathering and erosion that can lead to slope failure (see Geology and Land Forms for additional discussion of slope failure.). In addition, the lowland areas near the rivers are easily erodible, particularly during periods of flooding. The area of the Park most susceptible to flood-induced erosion is Virginius Island and the channels along the Shenandoah River. Virginius Island as a whole is relatively stable and able to withstand even large floods; large-scale channel scour has not occurred in the area in the past 50-100 years. Small-scale sedimentation changes are ongoing and localized erosion and deposition takes place during every flooding event

#### Soil is more than just pulverized rock

But soil is more than just pulverized rock. [Ecobit: Soil—It’s Not Just Dirt!](http://www.explorenaturalcommunities.org/content/soil%E2%80%94its-not-just-dirt) For information on how soil is formed, [topsoil](http://www.explorenaturalcommunities.org/glossary/term/223), and soil textures, see [Soils](http://www.explorenaturalcommunities.org/ecology-basics/physical-setting/soils) in Ecology Basics.

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### Geology

What does geology have to do with [natural communities](http://www.explorenaturalcommunities.org/glossary/term/23)? More than you might think. The types of [bedrock](http://www.explorenaturalcommunities.org/glossary/term/38) and/or sediments in a place largely determine the shape of the land and the make-up of the soil, both of which influence what types of plants can thrive there.

The park is home to many interesting geologic formations such as the chevron folds visible in both Maryland and Loudoun Heights and the old phyllite quarry sites located within the historic town itself. A favorite among visitors are the Stone Steps leading up to Jefferson Rock, which were carved directly into the phyllite of the Harpers Formation in the lower town in the 19th century. Another notable geologic formation is the water gap between Maryland and Loudoun Heights. This gap was formed about 360 million years ago when the Potomac River began cutting through the Appalachian Mountains. Today this gap marks the confluence of the Potomac and Shenandoah Rivers and is considered by many to be the area's most prominent geological feature.

#### Overview [from USGS – technical]

Harpers Ferry National Historical Park covers a portion of the northeast-plunging Blue Ridge-South Mountain anticlinorium, a west-verging allochthonous fold complex of the late Paleozoic Alleghanian orogeny. The core of the anticlinorium consists of high-grade paragneisses and granitic gneisses that are related to the Grenville orogeny. These rocks are intruded by Late Proterozoic metadiabase and metarhyolite dikes and are unconformably overlain by Late Proterozoic metasedimentary rocks of the Swift Run Formation and metavolcanic rocks of the Catoctin Formation, which accumulated during continental rifting of Laurentia (native North America) that resulted in the opening of the lapetus Ocean. Lower Cambrian metasedimentary rocks of the Loudoun, Weverton, Harpers, and Antietam Formations and carbonate rocks of the Tomstown Formation were deposited in the rift-to-drift transition as the early Paleozoic passive continental margin evolved. The Short Hill fault is an early Paleozoic normal fault that was contractionally reactivated as a thrust fault and folded in the late Paleozoic. The Keedysville detachment is a folded thrust fault at the contact of the Antietam and Tomstown Formations. Late Paleozoic shear zones and thrust faults are common. These rocks were deformed and metamorphosed to greenschist-fades during the formation of the anticlinorium. The Alleghanian deformation was accompanied by a main fold phase and a regional penetrative axial plane cleavage, which was followed by a minor fold phase with crenulation cleavage. Early Jurassic diabase dikes transected the anticlinorium during Mesozoic continental rifting that resulted in the opening of the Atlantic Ocean. Cenozoic deposits that overlie the bedrock include bedrock landslides, terraces, colluvium, and alluvium.

The area is underlain by rocks of the northeast plunging Blue Ridge-South Mountain anticlinorium, a late Paleozoic (Mississippian?) Alleghanian structure (fig. 1). Middle Proterozoic paragneisses and granitoids intruded by Late Proterozoic metadiabase and metarhyolite dikes and Jurassic diabase dikes underlie broad valleys in the areas and form the core of the anticlinorium. Late Proterozoic metasedimentary and metavolcanic rocks and Lower Cambrian metasedimentary rocks underlie the high ground of Short Hill-South Mountain where topographic relief ranges from 100 to 450 m (300 to 1,476 ft). The Short Hill fault transects the quadrangle and causes a repetition of the west limb of the anticlinorium. Alluvium is found along the Potomac and Shenandoah Rivers and all tributaries. Colluvium is abundant on the flanks of Short Hill-South Mountain.

The park is located in the Blue Ridge Mountain section of the Appalachian Mountain Range. The geological history of the park begins 550 million years ago when this area was covered by a shallow sea. Deposition of sediments such as sand, clay, and limestone, began at this time. When the continent of Africa collided with the continent of North America about 360 million years ago, the Appalachian Mountains rose. Normal compaction along with the heat and pressure generated by this collision changed these sediments into the quartzite (sand), phyllite (clay), and limestone (fossil shells and mud) rock types found in the mountains here today.

#### List of Geologic Units at HAFE

##### Antietam Formation phyllitic meta-siltstone

##### Catoctin Formation metabasalt

##### Catoctin Formation metabasalt

##### Catoctin Formation tuffaceous meta sedimentary

##### Harpers Formation phyllitic meta-siltstone

##### Harpers Formation quartzite

##### Loudoun Formation conglomerate

##### Loudoun Formation phyllite

##### diabase dikes

##### Garnet graphite gneiss

##### Garnet monzogranite

##### Hornblend gneiss

##### Swift Run Formation marble

##### Swift Run Formation phyllite

##### Swift Run Formation quartzite

##### Tomstown Formation limestone

##### Waynesboro Formation limestone

##### Waynesboro Formation sandstone and shale

##### Weverton Formation Weverton Formation

### Topography

As the Appalachian mountains rose, the waters of an ancient sea evaporated and the Potomac River eventually cut through the rock, forming the water gap between Maryland Heights and Loudoun Heights. This is considered by many to be the most prominent geologic and topographic feature in the park. The Appalachian mountains, which were once taller than the Rockies are today, were worn down over many years by rock, wind, rain, and ice. The cutting of the Potomac River through the gap was part of this process. After this erosion, only the roots of the Appalachian Mountains were left. Water running off of the mountains began collecting at their base, forming what is now the Shenandoah River. This river flows along the base of the Blue Ridge Mountains until it reaches Harpers Ferry, where it joins the Potomac River and flows east towards the Chesapeake Bay.

### Watersheds

Harpers Ferry National Historical Park is located in at the confluence of the Potomac and Shenandoah rivers. The ridge that passes down US Highway 340 and continues through Bolivar Heights and the Harper Graveyard, terminating in the lower town, separates the upper Potomac watershed on the north from the Shenandoah watershed to the south. The lower Potomac watershed begins at the confluence point in the water gap and continues downstream to the Chesapeake Bay.

## Natural Processes

### Fire

### Floods

### Canopy Gap Regeneration

### Herbivory

### Erosion and Sediment Transport

### Processes Affecting Soils

### The Water Cycle

### Forest Succession

### When Natural Processes are Interrupted

## The Forests of Harpers Ferry (based on ROCR)

There are about 500 native plant species in Harpers Ferry National Historical Park (and another 200 [non-native invasive plants](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/stewardship-and-ecological-threats/plants-and-animals/non-native-invasive-plants)).[1](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/native-plants#footnote1_9bganny) Most of the native plants there are forest species—trees and the smaller plants that grow beneath them.

That’s because the Appalachian landscape and climate generally supports forests, in particular forests composed of a mix of [*deciduous*](http://www.explorenaturalcommunities.org/glossary/term/61) and [*evergreen*](http://www.explorenaturalcommunities.org/glossary/term/73) trees. (Learn more about the [climate of Harpers](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/physical-setting/climate) Ferry under [Physical Setting](http://www.explorenaturalcommunities.org/parks-places/rock-creek-park/natural-history/physical-setting).)

Most of the trees at Harpers Ferry are deciduous, meaning that they shed all their leaves seasonally each year. Some trees and shrubs here are evergreen—keeping their leaves year-round. Old leaves die and new leaves grow, but the old leaves are not shed all at once, so the plant is never completely leafless. Evergreen leaves may be needle-like (think pine needles), or broad (such as [American holly](http://www.explorenaturalcommunities.org/species/ELEMENT_GLOBAL.2.132716) or [mountain laurel](http://www.explorenaturalcommunities.org/species/ELEMENT_GLOBAL.2.159823)).

Winter storms can be tough on trees, particularly evergreen ones. The limbs and tops of trees bend and can break under the weight of accumulated snow and ice. In areas like Harpers Ferry, where freezing precipitation occurs, evergreen trees in natural forests typically have needle-like leaves and/or pliable limbs so they might avoid this damage, but periodic ice of snow storms may cause loss of tree limbs or entire trees.

Trees also may suffer from periods of drought, which can occur at Harpers Ferry. Prolonged periods of drought have been known to occur, and summers are often characterized by dry spells that are punctuated by extreme weather events such as thunderstorms and hail storms.

## Sources

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