



“To conserve the scenery and the natural and historic objects and the wild life therein... for the enjoyment of this and future generations.”

NPS Organic Act 1916

Mid-Atlantic Network

Natural Resource Inventory and Monitoring within Mid-Atlantic National Parks

The Inventory and Monitoring Program (I&M) is a national program charged with the design and implementation of ecological monitoring programs for national parks.

Knowing the condition of natural resources in national parks is fundamental to the National Park Service’s ability to manage park resources “unimpaired for the enjoyment of future generations” (Organic Act 1916). National park managers across the country are confronted with increasingly complex and challenging issues that require a broad-based understanding of the status and trends of park resources as a basis for making decisions and working with other agencies and the public for the benefit of park resources. The I&M Program ensures that park managers will have high quality, scientifically based information to protect and manage the parks.

The Mid-Atlantic Network (MIDN) is one of 32 I&M networks throughout the country. Within this network are ten parks, distributed from southern Pennsylvania to southern Virginia, and extending from the Blue Ridge Mountains to the Piedmont and the Coastal Plain. With the exception of Shenandoah National Park, the Mid-Atlantic Network parks were established



Gettysburg NMP: A red-tailed hawk (*Buteo jamaicensis*) perches on a historic fence. (Photo by Mike Bulka).

primarily for their historical or cultural interest, however, these parks also contain diverse natural resources. Found within these seemingly cultural landscapes are state endangered plants and animals, glob-

ally rare vegetation communities, grassland ecosystems, scenic rivers and unique wetland types – evidence that historical and cultural based parks can contain important natural values. •

From the mountains of Virginia to the battlefields of Pennsylvania: A showcase of the Mid-Atlantic Network national parks



Shenandoah NP: Vegetation monitoring at Big Meadows

Shenandoah NP as a Prototype

Shenandoah National Park provides an outstanding contribution to the Mid-Atlantic Network. In 1992 the park was established as a prototype to represent the Eastern Deciduous Forest Biome. The Shenandoah program, called the Long-term Ecological Monitoring (LTEM) Program, aims to 1) obtain and maintain a scientifically-based understanding of the type, abundance, and distribution of natural resources, 2) monitor resource condition and changes through time, and 3) monitor natural processes and human influences that maintain or affect ecosystem health.

The 199,000 acre Shenandoah NP is located astride the Blue Ridge Mountains in Virginia. The park rises above the Virginia Piedmont to its east and the Shenandoah Valley to its west with two peaks exceeding 4,000 feet. The range of elevation, slopes and aspects, rocks and soils, precipitation, and latitude create a mix of habitats. Most of the park's landscape is forested, with hardwoods dominating the park. Remnants of boreal forests occur at higher elevations. •

Appomattox Court House NHP

This 1,743 acre national historical park was established in 1935 to commemorate the end of the Civil War and preserve the Village of Appomattox Court House. The park is comprised of deciduous forest, meadows, and agricultural fields. The Appomattox River travels through the park. Additionally, the park contains nearly 100 acres of wetlands, including two rare types of wetland communities classified as Montane Basic Seepage Swamp and Upland Depression Swamp.

Booker T. Washington NM

Established in 1956, this national monument is a public memorial to the birth and childhood home of Booker T. Washington, a slave, educator, and national leader. Nearly half the park's 239 acres are forested, primarily with second growth maturing pine and a variety of hardwoods. The park's forests are considered geographically unique because they contain species that are out of their range. Booker T. Washington NM is the only MIDN park that is within the Roanoke Watershed.



Eisenhower NHS: Wood turtle (*Glyptemys insculpta*) along Marsh Creek

Eisenhower NHS

Established in 1967, this national historic site consists of the house and farm of Dwight D. Eisenhower, 34th President of the United States. The site includes 700 acres of bucolic farmland, meadows, and secondary oak-hickory forest. Two streams, Marsh Creek and Willoughby Run, traverse the park and provide habitat for



Gettysburg NMP: Grassland area on Little Round Top

a variety of plants and animals. The state of Pennsylvania has designated portions of the park as both an Important Bird Area and an Important Mammal Area.

Fredericksburg & Spotsylvania NMP

Established in 1927 to commemorate the Civil War battles of Fredericksburg, Spotsylvania Court House, Wilderness, and Chancellorsville, this national military park contains nine principal units on 7,248 acres. Approximately 1,300 acres of the park are managed as open fields, with the remainder of the park composed of oak-hickory forest of various successional stages. The park's natural habitat is enriched by the Rappahannock, Ni, and Po Rivers which flow through the park. In addition, the park contains three rare wetland community types.

Gettysburg NMP

Commemorating the Civil War Battle that occurred on the first three days of



Hopewell Furnace NHS: View of the village

July, 1863, this 5,990 acre national military park presents a mosaic of natural habitats. With over 2,300 acres of open landscape, the park represents one of the few contiguous grassland ecosystems in the northeastern United States. Forested areas of the park are primarily oak-hickory. Rock Creek and Marsh Creek, along with their tributaries, enhance the park's natural ecosystems. The park contains many state listed plants and animals and portions of the park are included within the Pennsylvania Important Bird Area.

Hopewell Furnace NHS

This national historic site represents one of the finest examples of a rural American 19th century iron plantation. Encompassing 848 acres of primarily forested ecosystems, this park provides habitat for numerous state listed bird species and state endangered plants. French Creek, a state designated Exceptional Value stream, flows through the heart of Hopewell Furnace NHS.

Petersburg NB

Petersburg National Battlefield is one of four NPS units commemorating the battlefields of the 1864-65 Civil War campaigns in Virginia. This 2,659 acre park contains a variety of natural ecosystems,



Richmond NBP: Malvern Hill battlefield with oak-hickory forest in the background

ranging from the combination of mixed hardwood/pine forests and open fields that encompass the park's Eastern Front to the wetlands of Hatcher's Run at the Five Forks Battlefield. The park hosts the greatest number of amphibians and reptiles in the Virginia network parks.

Richmond NBP

Established in 1936 this national battlefield park commemorates the Siege of Richmond, Virginia, during the Civil War. Situated on the Fall Line between the Coastal Plain and the Piedmont, this 1,697 acre park contains ten units spread out over a 132-square mile area. The park is primarily forested with types transitioning from mixed hardwood to pine to mixed oak communities. The Gaines Mill unit contains an

outstanding mesic mixed hardwood forest. The park also has open fields with native grasses, agricultural areas, and wetlands.

Valley Forge NHP

This national historical park was established to preserve the winter encampment of General George Washington and the Continental Army during the winter of 1777-1778. Located 12 miles northwest of Philadelphia, the park's 3,446 acres contain forest, meadows, wetlands, riparian areas, and caves. Valley Creek, a Class A Trout Stream and Exceptional Value waterway, and the Schuylkill River, a Pennsylvania Scenic River and Heritage Corridor, flow through the park. •



Valley Forge NHP: *Woodwardia aerolata*, a native fern species

An unprecedented inventory of park natural resources

The National Parks Omnibus Management Act of 1998 directed the Secretary of Interior to develop a program of "inventory and monitoring of National Park System resources to establish baseline information and to provide information on the long term trends in the condition of the National



Spotted salamander (*Ambystoma maculatum*) egg mass at Gettysburg NMP

Park System." This Act initiated the Natural Resource Challenge, the primary directive guiding the NPS Inventory and Monitoring Program.

An inventory of park resources is an unprecedented effort by the National Park Service to scientifically inventory and document basic biological and geophysical natural resources in over 270 park units throughout the United States and its territories. Twelve "core" or baseline inventories have been identified as information sources that parks need to effectively manage and protect their resources. The Mid-Atlantic Network is working with park staff and local scientists to complete these core inventories. •

The 12 Baseline Inventories

- Natural Resource Bibliography
- Base Cartography Data
- Species Occurrence Inventory (vertebrates & vascular plants)
- Species Distribution Inventory
- Vegetation Maps
- Soils Resources Inventory
- Geologic Information Inventory
- Air Quality Inventory
- Air Quality – Related Values Assessment (impacts on resources)
- Climate Data Inventory
- Water Resource Inventory
- Water Chemistry Inventory

Vital signs monitoring: Taking the pulse of the Mid-Atlantic Network national parks

Park vital signs are selected physical, chemical, and biological elements or processes of park ecosystems that represent the overall health or condition of the park. Monitoring of vital signs is designed to inform managers of the condition of water, air, geologic resources, plants and animals, and the various ecological, biological, and physical processes that act on those resources.

The Mid-Atlantic Network is working with park managers, regional scientists, and partnering agencies to develop and implement a vital signs monitoring program for the Mid-Atlantic parks. Through the long-term monitoring of selected park vital signs the condition of park resources will be sustained and protected for future generations. •

The Goals of Vital Sign Monitoring

- Determine the status and trends in selected indicators of the condition of park ecosystems to allow managers to make better-informed decisions and to work more effectively with other agencies and individuals for the benefit of park resources
- Provide early warning of abnormal conditions of selected resources to help develop effective mitigation measures and reduce costs of management.
- Provide data to better understand the dynamic nature and condition of park ecosystems and to provide reference points for comparisons with other, altered environments.
- Provide data to meet certain legal and Congressional mandates related to natural resource protection and visitor enjoyment.
- Provide a means of measuring progress towards performance goals.



National Park Service
U.S. Department of the Interior

Mid-Atlantic I&M Network

Fredericksburg and Spotsylvania
National Military Park
120 Chatham Lane
Fredericksburg, VA 22405
www.nature.nps.gov/im/units/midn/

Network Coordinator

Jim Comiskey

Data Manager

Kristina Callahan

Brochure Designer & Editor

Carolyn Davis

National Inventory & Monitoring Program:

<http://science.nature.nps.gov/im/index.cfm>

National Park Service:

www.nps.gov

EXPERIENCE YOUR AMERICA™

