



Monitoring Natural Resources in the National Capital Region: The NCRN I&M Program

What is NCRN I&M?

NCRN I&M stands for the National Capital Region Network Inventory & Monitoring program.

The Inventory & Monitoring program is a major National Park Service strategy to improve park management through greater reliance on scientific information.

The National Capital Region Network, is one of 32 I&M networks nationwide. It contains 11 park units in Virginia, West Virginia, Maryland, and the District of Columbia that share common natural resources.

Parks of the National Capital Region Network

- Antietam National Battlefield (MD)
- Catoctin Mountain Park (MD)
- Chesapeake and Ohio Canal National Historical Park (DC, MD)
- George Washington Memorial Parkway (DC, MD, VA)
- Harpers Ferry National Historical Park (MD, VA, WV)
- Manassas National Battlefield Park (VA)
- Monocacy National Battlefield (MD)
- National Capital Parks – East (DC, MD)
- Prince William Forest Park (VA)
- Rock Creek Park (DC)
- Wolf Trap National Park for the Performing Arts (VA)

What's the background of NCRN I&M?

The national I&M program was initiated with the 1999 “Natural Resource Challenge: The National Park Service’s Action Plan for Preserving Natural Resources.” The NCRN I&M kicked off activities in 2000. Most natural resource inventories were completed by 2005, the same year

monitoring began for water. Monitoring is now the primary activity of the NCRN I&M program.

NCRN I&M employees have expertise in botany, database management, ecology, GIS, taxonomy, and water quality.

What does NCRN I&M do?

The NCRN I&M program monitors the status and trends of the region’s ecosystem health and provides information that enables the parks to better manage and interpret their natural resources.

To do this, we monitor 18 ecosystem “vital signs” (see reverse). These vital signs are 1) select physical, chemical, and biological elements and processes of park ecosystems; 2) known or hypothesized effects of stressors; 3) elements that have important human values.

What about the “Inventory” part of I&M?

There are 12 core natural resource inventories for NCRN parks, a majority of which are already completed (see reverse). They include air quality, geologic resources, base cartography, and water quality inventories. An inventory of species occurrence and distribution is divided into 9 targeted inventories to determine the occurrence of vertebrates and vascular plants in network parks where this data did not already exist.

Why do we need NCRN I&M?

The NCRN I&M program provides fundamental information on ecosystem health and is creating an indispensable baseline for the status of natural resources in the region’s parks. Our monitoring data supports management decision making, park planning, research, education, and promotes public understanding of park resources. It also provides reference points for comparisons of our parks with other natural areas.



New York ferns (*Thelypteris noveboracensis*) in Catoctin Mountain Park. Photo by Thomas Paradis.



How do I get NCRN I&M information?

NCRN I&M information is available to the public online and in hard copy. To access NCRN I&M data online visit us at <http://science.nature.nps.gov/im/units/ncrn/index.cfm> and select “Monitoring” or “Inventories” from the left navigation bar. To view the status of any inventory select “Inventories” and follow the link for the “Inventory Tracking Database” at the bottom of the page.

For hardcopy materials or other inquiries, contact us at: NCRN Inventory & Monitoring, Center for Urban Ecology 4598 MacArthur Blvd. NW, Washington, D.C. 20007.

NATURAL RESOURCE INVENTORIES	
http://science.nature.nps.gov/im/units/ncrn/inventories.cfm	
Natural Resource Bibliography	Species Occurrence and Distribution: Bird Inventory Small Mammal Inventory Bat Inventory Fish Inventory Vascular Plant Inventory Herpetological Inventory Paleontological Inventory Macrofungal Inventory Graminoid Inventory
Base Cartography Data	
Air Quality Data	
Air Quality Related Values	
Climate Inventory	
Geologic Resources Inventory	
Soil Resources Inventory	
Water Body Location and Classification	
Baseline Water Quality Data	
Vegetation Inventory	
Species Lists	

NATURAL RESOURCE (VITAL SIGNS) MONITORING		
http://science.nature.nps.gov/im/units/ncrn/monitoring.cfm		
Category	Vital Sign Name	Vital Sign Measures
Air and Climate	Ozone	Atmospheric ozone concentration
	Wet deposition	Wet deposition chemistry (pH, NO ₃ ⁻ , SO ₄ ⁻)
	Visibility and particulate matter	Particulates of 2.5 microns as mass fraction
	Mercury deposition	Mercury deposition
	Weather	Ambient temperature, precipitation
Geology and Soils	Physical Habitat Index (PHI)	Stream habitat structure, river depth, vegetation composition on adjacent lands
Water	Surface water dynamics	Flow, discharge, water depth, wetted width
	Water chemistry	pH, dissolved oxygen, specific conductance, temperature, acid neutralizing capacity, salinity
	Nutrient dynamics	Nitrate, ammonia, total phosphorous
	Aquatic macroinvertebrates	Species composition and abundance measured as Index of Biological Integrity (IBI)
Biological Integrity	Invasive/exotic plants	Abundance and distribution of select species
	Forest insect pests	Presence of select pest species
	Forest vegetation	Species diversity, tree canopy class and size class, deer browse, tree seedlings, and woody debris
	Fish	Species composition measured as Index of Biological Integrity (IBI)
	Amphibians	Species composition and proportion of area occupied, malformations
	Forest birds	Species composition and abundance
	White-tailed deer	Deer density
Landscapes (Ecosystem Pattern and Processes)	Land cover/land use	Area of dominant land cover types, connectivity, core/edge ratio of dominant forest communities, weighted average patch size, adjacency matrix