# Rock Creek Park

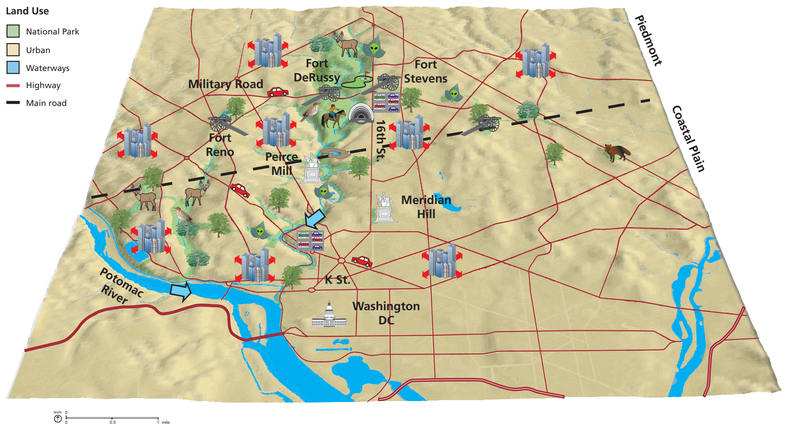
District of Columbia

National Park Service
U.S. Department of the Interior

National Capital Region Network

## Pioneering the Value of Urban Parks

Rock Creek Park is one of the largest forested urban parks in the United States, containing a wide variety of natural, historical, and recreational features in the midst of Washington, DC. The majority of the 3,000 acre park surrounds the lower watershed of Rock Creek and its tributaries as the drainage drops from the Piedmont Plateau to the Coastal Plain. The mixed deciduous forests, streams, and sensitive floodplain communities of the park represent a largely isolated natural system surrounded by urban areas, which impact park resources through traffic, flooding and pollution of park streams, introductions of invasive species, recreational demand, dumping, collecting, creation of unauthorized trails, and boundary encroachments.




**Resource Values**

- Freshwater flow: Rock Creek
- Physiogeographic regions
- Historic/cultural sites
- Forests: beech, oak and tulip poplar
- Native wildlife: red fox and wood thrush
- Wetlands: seep

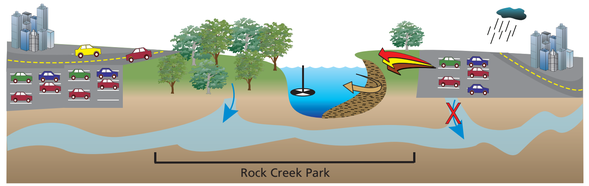
**Resource Stressors**

- Development: urban
- Recreation: golf course
- Major highways and roads
- Impervious surfaces
- White-tailed deer: overpopulation
- Invasive/exotic plants


Rock Creek Park landscapes in winter and summer.

## Water Quality and Hydrology

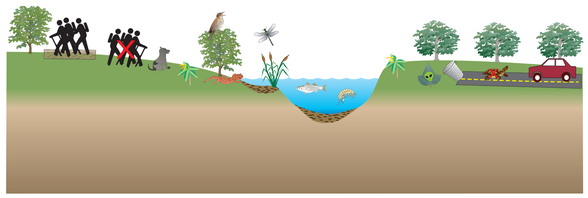
*Impervious surfaces surround park*


As the first urban park in the National Park Service, Rock Creek Park provides and protects an important ecological resource for the nation's Capital. Expanding development outside the park continues to increase impervious surfaces , resulting in increased stormwater runoff of sediments and nutrients, creek bed scouring , and reduced natural inputs to recharge groundwater . The park's large tract of forest (85% of the park is woodland) buffers stormwater impacts and improves water quality within the park by filtering out nutrients and other pollutants.

## Biodiversity

*Urban pressures impact natural resources*

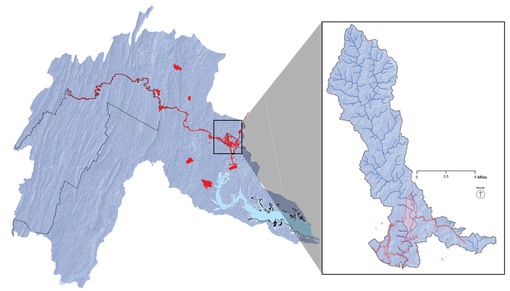



Rock Creek Park offers a wide range of recreational and respite opportunities for the park visitor while preserving the original biodiversity of the area including rare dragonflies , amphipods , salamanders , fish , interior forest birds , and native plants . However, visitor use may significantly impact the natural resources of the park. Vehicular traffic results in numerous road kills and park roads fragment forests. The spread of invasive exotic plants by dumping , the creation of unauthorized trails , and dogs off-leash damage resources and threaten fragile forest habitat and biodiversity.

Roadkills are a common sight on busy roadways.


Park cooperators sampling in forest wetlands, in search of the Federally-endangered Hay's Spring amphipod.

## Rock Creek Park Watershed



(Above left) Potomac River watershed and National Capital Region Network parks (red). (Above right) Rock Creek Park watershed and boundary.

Park map showing major roads and waterways.

## Vital Signs Monitoring

*Assembling the puzzle*

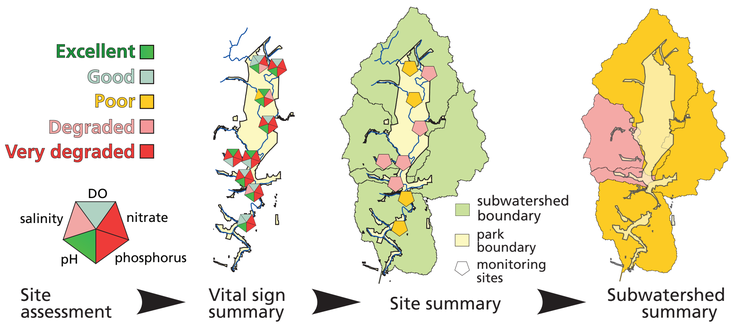
Park vital signs monitoring is designed to inform managers of the condition of water, air, plants and animals, and the various ecological, biological, and physical processes that act on those resources. This site-specific data will provide parks the information needed for ecologically sound management of the natural resources.

n Rock Creek Park, data are being collected on **Water Quality and Hydrology** and **Biodiversity**, with reference to park specific oncerns as well as understanding regional issues.

A preliminary assessment of water quality within Rock Creek Park shows very high nutrient concentrations but high dissolved oxygen, resulting in overall poor or degraded conditions throughout the park. Water quality metrics will soon be combined with measures of air quality, biodiversity and ecosystem pattern and processes to give a full integrated assessment of park health.

Annual medians were compared to management thresholds.

| Vital sign metric | Threshold |
|---|---|
| dissolved oxygen | > 5mgL$^{-1}$ Mar-Jun<br>> 4mgL$^{-1}$ Jul-Feb |
| nitrate | < 0.69 mgL$^{-1}_{1}$ |
| total phosphorus | < 0.037 mgL- |
| pH | 6.0-8.5 |
| salinity | < 0.25 |




**National Capital Region Inventory & Monitoring Program**
National Park Service
**www.nps.gov/cue**

**Integration & Application Network (IAN)**
University of Maryland Center for Environmental Science
**www.ian.umces.edu**

Photos by NPS