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## Enhance Urban Natural Areas



Red-shouldered hawk in Rock Creek Park

## Big Idea in Action

In the future, Washington's parks will contain the majority of the city's forests, wetland and riparian habitats, and many unique ecosystems. Washington's urban natural areas are appreciated and protected for the use and enjoyment they provide to residents and visitors, but also because they are respected urban sanctuaries that provide a safe refuge for wildlife and important ecological functions that enhance the entire metropolitan region.

Washington's natural parkland areas, including the numerous stream valleys and wildlife corridors, connect to each other, connect to urban neighborhoods, and connect to the greater regional system of natural areas. Natural areas are protected, restored, and enhanced.

The natural areas in Washington's parks play a critical role in fulfilling the city's sustainability and environmental goals. Low impact and sustainable measures to reduce pollution are incorporated across the city and around the region. The natural and built environment now work in concert, providing the city with green infrastructure to improve air and water quality and address climate change.



Kayaker on the C&amp;O Canal



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Boulder Bridge, Rock Creek Park, ca. 1920-1940

## Brief History of Washington's Natural Areas

Washington's parks contain most of the city's river and stream valley corridors, escarpment, and forested areas, and provide many ecological functions. Historically, the preservation and management of these spaces was related to two main purposes. First, natural areas provided a critical element of much-needed city infrastructure by serving as discharge areas for stormwater. Second, there was an interest in conserving aesthetically pleasing natural features and recreational opportunities, which provided places of public respite. Neither purpose, however, was fully informed by the ecological value of these areas now recognized by park providers, environmental advocates, and the public.

Despite having admiration for its natural features, Washington's city builders were more preoccupied with the construction of roads, buildings, and other infrastructure during the city's first 100 years. During the 19th century, these

activities included massive forest clearing, re-engineering of natural springs to supply city water, leveling of bluffs and filling in of valleys to provide a flat terrain for development, and the use of rivers as depositories for the city's sewage. These actions, and the rapid population growth post-Civil War led to infrastructure, economic, and health problems that in turn further impacted natural areas. Deforestation caused the Anacostia and Potomac Rivers to fill with silt, disrupting navigation and exacerbating flooding. Untreated sewage trapped in the silted rivers threatened public health, resulting in the filling of many wetlands and marshes. City-wide sewer infrastructure was constructed in stream valley corridors, and many streams were put into underground pipes. Stream valleys were purchased as parkland in part for the purpose of conveying stormwater from neighborhood streets to the rivers. Even park plans could negatively affect natural areas—the McMillan Plan of 1901 resulted in additional filling of low-lying areas along the Potomac River to complete the National Mall.

However, use as city infrastructure was not the only reason tracts of land were converted into parks. Towards the end of the 19th century there was growing recognition of the value of parks in elevating the quality of life of city residents. Civic initiatives focused on acquisition of many of the remaining natural areas of Washington for urban recreation and nature conservation. Rock Creek Park was created by a Congressional act in 1890 with a mandate to protect its natural beauty while accommodating carriageways and trails for public use.

The McMillan Plan established a city-wide plan for a connected system of park and open spaces that included sites along the escarpment, the stream valley corridors, and river edges, including a proposal for Anacostia Park. This plan subsequently drove park acquisition in the first half of the 20th century, resulting in the majority of the park areas present today. These significant park acquisitions and their inclusion in the National Park System, often under the directive that their natural resources be protected, has resulted in the city's many connected and largely intact natural corridors.

Increasing recognition of the importance of natural areas for wildlife habitat, community health and to provide critical climate, air, soil and water quality, continued to gain momentum throughout the 20th century. Inspired by publications such as *Silent Spring* by Rachel Carson and *Design with Nature* by Ian McHarg, this growing environmental awareness led to federal and local legislation and programs to protect and restore natural resources. Beginning in the 1980s, regional efforts to protect and restore the Chesapeake Bay, the Potomac and Anacostia Rivers, and their tributaries raised public awareness on the need to balance healthy ecosystems with the built environment.

The early 21st century has seen more work to restore urban natural areas and protect them from future development pressures. Spearheaded by the work of Casey Trees, Washington is working towards restoring the city's tree canopy to 40 percent by 2030. Plans are also underway to make the Anacostia River safe for swimming and fishing by 2032. The creation of the Mayor's Green DC Agenda program in 2009 commits Washington to become one of the most sustainable cities in the world. These goals for a sustainable, resilient city highlight the continuing need to integrate restored natural areas into the fabric of the urban environment.



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Rock Creek Park, ca. 1920

Land uses such as athletic fields can sometimes bring unintended impacts to ecologically sensitive areas. Fertilizers and other lawn care chemicals can contaminate adjacent streams.



## Challenges

Urban parks are often defined and valued by the way they are used by residents and visitors. Some parks have a variety of more active recreational uses, with each use represented by a different constituency group. These groups serve as an ad hoc oversight committee to ensure their parks are maintained sufficiently. In addition, the historic planned squares and circles within Washington are protected by a number of historic preservation laws, regulations, and policies. Many of Washington's natural areas, however, do not have well-defined constituent groups, nor do they have the benefit of robust policies designed to protect their ecological communities and functions.

Because natural park areas are wild and unstructured spaces, and are not activity-focused, they are often invisible in the urban landscape. In some instances these spaces are overgrown with vegetation and can seem forbidding and unsafe to adjacent residents. In other cases, they are heavily used for active recreation that may be disruptive and damaging to the fragile natural ecosystem. Often, the very measures that residents request to make a park safer—adding lighting, paving trails, or clearing vegetation—end up threatening these urban natural places.

The pressure on Washington's natural areas is significant and continues to grow. These areas are threatened not only by the potential for new development, but also by urban activities, increasing demand for recreational opportunities from a larger and more active population, and over-use by athletes and outdoor enthusiasts. When these areas are disturbed, invasive plant species such as English Ivy are more likely to out-compete native plants for resources and replace them. In turn, the habitat may become so adversely modified that wildlife populations are displaced.

Even more importantly, natural processes such as stormwater storage and filtration may be disrupted permanently. City and regional growth puts additional pressure on wetlands and other low-lying, permeable areas to detain and filter stormwater during storms. Without adequate on-site treatment of stormwater in the built environment, natural areas are negatively impacted by a quantity and quality of water that causes so much damage that the area is no longer capable of treating any water. This, in turn, destroys the carrying capacity of streams and rivers, and damages flora and fauna that have existed in this area for thousands of years.



Trashfree Anacostia

Trash and sewage kept the Anacostia River from supporting a healthy community of fish and wildlife.



Fishing along the trail at the C&O Canal National Historic Park

National Park Service

## Opportunities

Washington’s natural areas, parks, and other urban green spaces provide significant ecological value as corridors for wildlife to move within and through the region, for stormwater storage during periods of flooding, and for filtering air- and water-borne pollutants. Beyond local ecosystems, Washington’s parks and open spaces play a role in mitigating climate change and restoring regional river systems throughout the larger Chesapeake Bay watershed.

Many of Washington’s urban natural areas are stream corridors that weave through the urban fabric and host diverse riparian and upland habitats for myriad bird and wildlife species. Further protection and restoration of these areas will create a stronger wildlife corridor system that can connect to each other and to natural areas throughout the mid-Atlantic region. As more green roof development continues in Washington, these spaces can expand these corridors to provide additional habitat opportunities for native flora and fauna.

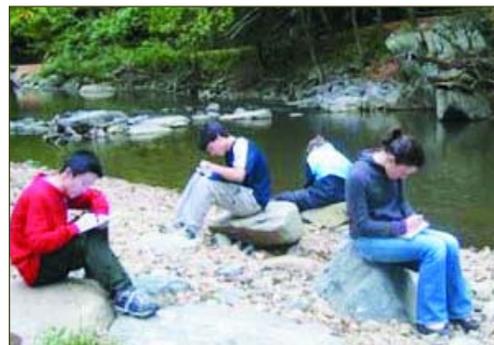
Washington’s trees, parks, and open spaces absorb carbon dioxide from the air, and wetlands help to improve water quality. Combined with the inclusion of sustainable design elements in new developments, urban natural areas can become a critical component of a green infrastructure system to improve environmental health. Advances in sustainable design technology and urban ecology allow for restoration of urban natural areas, and it is important to transform them into healthy, functioning ecosystems.

Urban wild areas are not only important because of their ecological benefits. Studies indicate that access to nature may have powerful preventative and curative impacts on personal health. For urban residents, nature can be a soothing and calm escape from the loud and harsh manmade environment, and natural areas can soften the hard edges of urban environments. Understanding how natural systems function and allowing residents and visitors to reconnect to nature helps create and retain a core group of advocates to protect and enhance these important spaces.



Hoopdreams 2009

To prevent illegal dumping of vehicles at Marvin Gaye Park, volunteers at the 2009 Hoopdreams Global Youth Service Day plant trees along its banks.



Alice Ferguson Foundation 2006

Journaling at Rock Creek

## Urban Natural Area Model Project

# Oxon Run Stream Corridor

Oxon Run is a natural system selected as a model project because a variety of public agencies, municipalities, and private and non-profit organizations are responsible for its management. Oxon Run, a tributary of the Potomac River, has lost most of its riparian habitats to urbanization. About 85 percent of the Oxon Run watershed within Washington is now directly connected to the storm sewer system, which significantly increases water velocity and reduces water quality. These existing conditions are not conducive to a healthy habitat for plants and animals.

Analyses based on field studies, stakeholder interviews, and research identified the major environmental challenges to the health of the Oxon Run watershed. The model project study also reviewed previous and ongoing restoration efforts, and provided recommendations specific to Oxon Run.

From this in-depth study, lessons were learned that informed recommendations on urban natural areas citywide, including:

- ◆ Habitat restoration
- ◆ Water quality improvements
- ◆ Improved recreation and community access
- ◆ Coordinated maintenance and monitoring
- ◆ Regulatory structures and policies

The Magnolia Bogs in the Oxon Run watershed are some of the last bogs known to exist in the Atlantic Coastal Plain area, and the only one of this type in the National Park Service inventory of wetlands.



National Park Service

## Lessons Learned

### **Involve Neighborhoods in Protecting Natural Areas**

Cities need natural landscapes because of the ecological functions they provide to developed areas, but natural areas also need neighbors to protect their functions for future generations.

### **Cooperation and Empowerment are Needed to Keep a Functioning Urban Ecosystem**

Natural resource issues do not always fall neatly within jurisdictional or political boundaries, and District entities must seek out and develop partnerships with each other, and with agencies and groups in neighboring jurisdictions.

### **Healthy Parks Help Create Healthy Communities**

Ecosystem-based approaches to park management can yield economic and environmental benefits.

### **Natural Areas Help Improve the Quality of Life for Neighbors**

Parks can improve an individual's well-being by providing a place to exercise and recreate, as well as engage residents and visitors in experiencing the natural world.

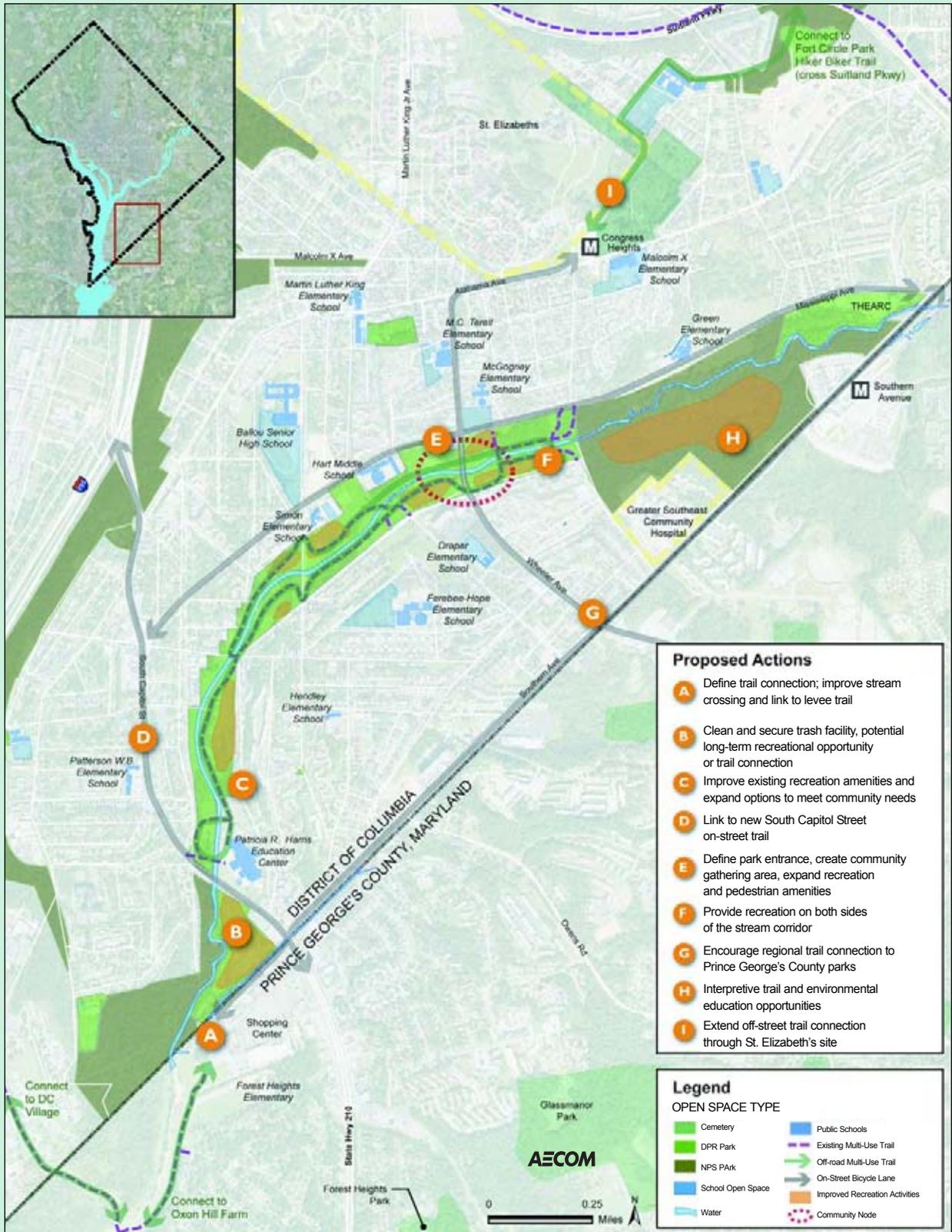
### **Increased Recreation Opportunities and Enhanced Ecological Functions are Not Mutually Exclusive**

Increased park programming, environmentally compatible forms of recreation, and environmental education opportunities can be desirable in natural areas and can help increase stewardship of the park, build a park constituency, and instill a greater understanding of the intrinsic value of nature.

# Urban Natural Area Model Project

## Oxon Run Stream Corridor Recreation Recommendations

Oxon Run can become a catalyst for environmentally themed community activities in southeast DC if appropriately programmed. The map shows several opportunities for recreation and community access.



This map illustrates conceptual trail connections. Refer to current trail maps for actual existing, planned, and proposed trail alignments.

## Recommendations

# Enhance Urban Natural Areas

### Form an Urban Natural Areas Team (ENV-1)

The natural resources embedded in Washington's parks need a coordinated team of federal and local agencies, as well as local organizations, to ensure that they are protected.

- ◆ Map the ecological functions, including existing wildlife habitats, wetlands, floodplains, tree canopy, etc., within the parks and an open-space system to ensure there is a unified inventory of existing green infrastructure and essential ecological functions within the parks system.
- ◆ Coordinate future research efforts being undertaken on natural resources by the National Park Service, including the Center for Urban Ecology, the District government, and other federal agencies such as the Department of Agriculture.
- ◆ Launch a District-wide ecosystem research consortium to apply new research strategies to measure and protect ecological functions.
- ◆ Expand nature and interpretative programs in existing parks that promote an appreciation of environmental resources, and institute school curriculum and teacher training programs that promote stewardship of the natural resources and waterways.



Alice Ferguson Foundation 2006

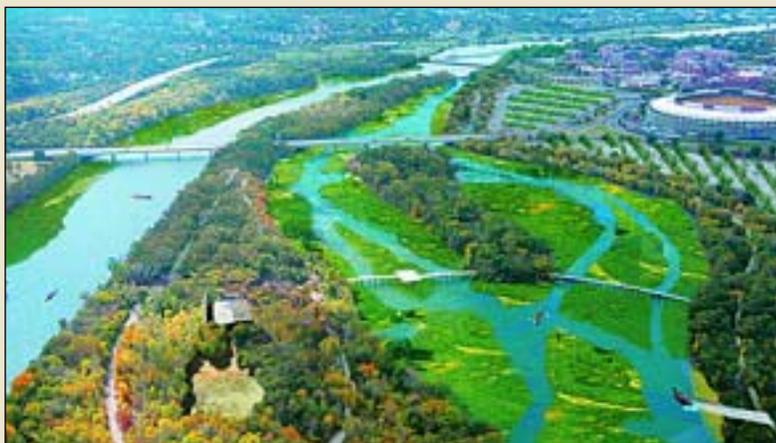
Water testing at Rock Creek

### Protect Ecological Functions (ENV-2)

It is important to protect the ecological functions provided by natural areas and parks.

- ◆ Adopt clear, consistent, and shared goals among responsible agencies and adjacent jurisdictions for long-term resource management.
- ◆ Establish and implement a District-wide tree canopy goal that applies to local and federal parks.
- ◆ Adopt park management goals that support the conservation of native species, protect critical habitats, and increase biodiversity. Reintroduce native plants and eliminate exotic invasive species where feasible.
- ◆ Develop and map resource protection districts to minimize the impacts of urbanization and development on natural areas.
- ◆ Implement cooperative watershed management strategies with adjacent counties that engage stakeholders, leverage resources, and empower neighborhoods to limit pollution and stormwater run-off.
- ◆ Identify the role Washington's parks, open spaces, and rivers play in climate change, and adopt a climate adaptation plan for essential ecological functions as affected by global warming relative to floodplains and species migration. Successful adaptation planning is likely to require significant federal and local cooperation and collaboration.
- ◆ Identify the environmental corridors that create the physical connection of the park system within the city and connections to larger regional systems.
- ◆ Adopt park management goals that support restoration of the Anacostia and Potomac Rivers.

## Recommendations



Simulated photo of Kingman Island and the Anacostia River showing the construction of wetlands (bright green areas) along its banks.



### Synchronize Park Management Strategies among Jurisdictions (ENV-3)

The importance of Washington's parks transcends agency jurisdictions and municipal boundaries. Federal and local agencies need to coordinate and collaborate regularly.

- ◆ Identify and rank parks and open spaces in need of preservation and restoration. Target funding for programming, research, and mitigation based on greatest need.
- ◆ Target off-site environmental mitigation efforts towards enhancing or restoring designated urban natural areas.
- ◆ Develop uniform standards and employ best management practices in all parks and natural areas for maintenance and operations, stormwater, water usage, pest management, and recreation programming.
- ◆ Launch a demonstration project for a coordinated park maintenance team for a trial period to maximize existing resources, consolidate training time, and improve maintenance outcomes.
- ◆ Integrate environmental interpretation activities in a sustainable manner at ecologically significant parks.

### Build a Green Infrastructure Network (ENV-4)

Stormwater management, flood control, and water quality can be reliably managed by integration of natural systems with engineered design elements that work with nature, often at a reduced cost. Green infrastructure can perform many of the same services as gray or man-made infrastructure.

- ◆ Design and build new green infrastructure to supplement existing gray infrastructure, when possible.
- ◆ Designate green infrastructure as a public utility in capital programs.
- ◆ Launch a Green-Parks Training Program which will train employees on sustainable land management techniques.
- ◆ Better connect green roof habitats to animal migration programs and patterns.

PLANNING CONCEPTS



Increase Access to Great Local Parks



Celebrate Urban Parks



Expand Park System Capacity



DC Department of Parks and Recreation

Little League baseball continues to be a popular pastime in Washington.

**OBJECTIVES**

Existing athletic fields are improved to expand capacity through physical ease of access and permitting. Appropriate levels of maintenance are funded and implemented to further increase capacity.