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How cities use parks for...

Green Infrastructure

Executive Summary

Just as growing communities need to upgrade and expand their built infrastructure of roads, sewers, and utilities, they also need to upgrade and expand their green infrastructure, the interconnected system of green spaces that conserves natural ecosystem values and functions, sustains clear air and water, and provides a wide array of benefits to people and wildlife. Green infrastructure is a community's natural life support system, the ecological framework needed for environmental and economic sustainability.[1]

In their role as green infrastructure, parks and open space are a community necessity. By planning and managing urban parks as parts of an interconnected green space system, cities can reduce flood control and stormwater management costs. Parks can also protect biological diversity and preserve essential ecological functions while serving as a place for recreation and civic engagement. They can even help shape urban form and reduce opposition to development, especially when planned in concert with other open spaces.

Key Point #1

Creating an interconnected system of parks and open space is manifestly more beneficial than creating parks in isolation.

Key Point #2

Cities can use parks to help preserve essential ecological functions and to protect biodiversity.

Key Point #3

When planned as part of a system of green infrastructure, parks can help shape urban form and buffer incompatible uses.

Key Point #4

Cities can use parks to reduce public costs for stormwater management, flood control, transportation, and other forms of built infrastructure.

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Making Great Communities Happen

KEY POINT #1:

Creating an interconnected system of parks and open space is manifestly more beneficial than creating parks in isolation.

No single park, no matter how large and how well designed, would provide citizens with the beneficial influences of nature; instead parks need to be linked to one another and to surrounding residential neighborhoods.—Frederick Law Olmsted[2]

The recreational and social values of city parks are well known. However, linking parks, greenways, river corridors, and other natural or restored lands together to create an interconnected green space system provides far greater benefits for people, wildlife, and the economy. It helps connect people and neighborhoods, provides opportunities for exercise that can counter today's trends in obesity and adult onset diabetes, and enhances emotional well-being by bringing nature "close to home." A network of parks can also provide pathways for wildlife moving from one isolated natural area to another. And just as it is necessary to design and construct road networks and other built infrastructure in advance of metropolitan growth, it is also important to plan and protect urban green infrastructure as a city grows.

Montgomery County, Maryland, initiated green infrastructure planning in the 1940s by planning a stream valley park system far in advance of the county's rapid growth. The county began buying land along all of its major stream corridors in the 1940s and 1950s—well before land development had made it impossible to preserve these ecologically important areas. Today all of the county's major stream corridors are public parks. In 2001, the county began adding to this system with a 10-year, $100 million initiative to complete a county-wide network of open space composed of protected farmland, stream valley parks, ecological reserves, trail corridors, and green space preserves.

KEY POINT #2:

Cities can use parks to help preserve essential ecological functions and to protect biodiversity.

When managed to maintain and restore natural ecological communities, city parks can help protect the biological diversity of local plants and animals. When connected strategically with riparian areas, wetlands, and other urban green spaces, the ecological value can far exceed the value of any one park. This is because isolated natural areas can "leak" native plant and animal species and suffer from the disruption of natural ecological processes, while connected parks can thrive as a wildlife habitat system and help to restore and maintain vital ecological functions and services.

Portland, Oregon: Forest Park. Covering more than 5,000 acres and containing old growth trees and many types of wildlife, Portland's Forest Park is one of the largest natural forested urban parks in the U.S. A 1982 wildlife survey identified more than 112 species of birds and mammals in the park.[3] It serves as the anchor for Portland's regional parks, trails, and greenspaces system. The Metropolitan Greenspaces Master Plan, adopted in 1992 by the Metro Council, describes a vision for a unique regional system of parks, natural areas, greenways, and trails for wildlife and people. The plan, being implemented by local park providers, schools, businesses, and citizen groups, identifies 57 urban natural areas and 34 trail and greenway corridors that define the green infrastructure for the Portland metropolitan region.[4]

Chicago Wilderness is a regional system of nature reserves that includes more than 200,000 acres of protected natural lands from southeastern Wisconsin through northeastern Illinois and into northwestern Indiana. The protected lands include forest preserves, state parks, federal lands, county preserves, and privately owned lands. Chicago Wilderness is a coalition of more than 160 public and private organizations working together to protect, restore, study, and manage the precious natural ecosystems of the Chicago region for the benefit of the public. Their vision, as described in the Biodiversity Recovery Plan, includes "a network of protected lands and waters that will preserve habitat for a complete spectrum of the region's natural communities. . . A critical mass of sites will be large enough to maintain a sustainable complex of interdependent species and natural communities. Carefully monitored habitat corridors will connect sites, both small and large, opening paths for ancient patterns of migration and dispersal."[5]

KEY POINT #3:

When planned as part of a system of green infrastructure, parks can help shape urban form and buffer incompatible uses.

Another value of interconnected urban green space systems is that they can enhance city aesthetics, help shape urban form, and improve urban quality of life. In **Seattle's University District**, residents and visitors can walk only a few blocks to descend into Ravenna Park and escape the city's hustle and bustle in a protected green oasis. Strategic design and placement of green space elements across the urban landscape can provide visual relief, separate incompatible land uses and complement the placement of new buildings, roads, and other city infrastructure.

Minneapolis, Minnesota. In 1883, the Minneapolis Board of Trade adopted a resolution to establish an independent park commission, reasoning that the rapid growth of the city "warns us that the time has come when, if ever, steps should be taken to secure the necessary land for such a grand system of Parks and Boulevards as the natural situation offers." The state legislature then authorized a voter referendum that was overwhelmingly approved that same year. One of the first acts of the newly established board was to engage the services of two well-known landscape architects of the time, H. W. S. Cleveland, the former head of the Boston park commission, and Frederick Law Olmsted. They both pressed for acquiring parklands well in advance of the existing need. The board followed their advice, acquiring large areas of land that would have been prohibitively expensive, if even available, in later years.

Theodore Wirth, parks superintendent from 1905 to 1935, was largely responsible for the development and expansion of the Minneapolis park system in its formative years. The park system he built, influenced by Olmsted's vision, reflects the individuality of the various components contained within. Today the 53-mile Grand Rounds parkway system contains numerous parks and parkways, 22 lakes within the city limits, streams and creeks, the Mississippi River, and the 53-foot high Minnehaha Falls, made famous by Henry Wadsworth Longfellow in his "Song of Hiawatha." The 6,400-acre park system is designed so that every home in Minneapolis is within six blocks of green space. The Minneapolis park system has been called "the best-located, best-financed, best-designed, best maintained public open space in America."[6]

KEY POINT #4:

Cities can use parks to reduce public costs for stormwater management, flood control, transportation, and other forms of built infrastructure.

Perhaps the greatest value of an interconnected green space system is the financial benefit that may be gained when green infrastructure reduces the need for built infrastructure. When designed to include stream networks, wetlands, and other low-lying areas, a city's green space system can provide numerous stormwater management benefits, including storing, carrying, and filtering storm runoff. American Forests estimates that the 187,767 acres of tree canopy in the Washington, D.C., metropolitan region provides 949 million cubic feet in avoided storage of water, valued at $4.7 billion annually.[7] Other benefits include the provision of alternative, less expensive modes of transportation. The Rails-to-Trails Conservancy estimates that one-third of weekday trail users are commuting in major urban areas with trail systems, such as Washington, D.C., Seattle, and Tampa.

Bellevue, Washington. Flood control and stormwater management in urban areas typically involve vast networks of underground storm sewers that feed into channelized streams or ditches and eventually into natural waterways. These systems are very expensive, and under extreme flood conditions they often fail. Bellevue has reclaimed its natural systems through the coordinated design of a citywide park system and a stormwater management program. In the early 1970s the city government made a decision to change its stormwater systems from an underground piped system to a less expensive surface drainage system. Today two city agencies, the Storm and Surface Water Utility and the Parks and Recreation Department, use the same land to accomplish multiple objectives. The utility bears responsibility for water resources and has a budget for land acquisition. The parks department manages much of the utility's land for parks, ball fields, playgrounds, interpretive areas, and trails. Many of these open space assets are also elements of the stormwater system. As a result of this partnership, both agencies have reduced their costs while achieving their diverse objectives.

Orlando, Florida. The Parramore Greenprint Plan blends together two essential elements for the revitalization of the Parramore neighborhood in Orlando. Former mayor Glenda Hood believed that creating park amenities was critical to stimulating private development in the community. Also critical to attracting private development was an economical and integrated stormwater management system to handle current and future development runoff and attenuation. The plan identifies strategic parcels for ponds to serve as water features in newly created parks. To maximize the benefit of the new parks, the plan identifies linkages between proposed facilities and existing sites.

When the economy is lagging and budgets are tight, park and open space funding is often on the chopping block. It is considered an unaffordable luxury. However, infrastructure is thought of as a necessity, not an amenity; something that communities must have, not just something that is nice to have. By thinking of parks as green infrastructure, communities can better understand that parks and other green spaces are a basic necessity that should be planned and developed as an integrated system.

References

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2. Little, Charles E. 1989. *Greenways for America.* Baltimore: The Johns Hopkins Press.
3. www.friendsofforestpark.org
4. www.metro-region.org
5. www.chiwild.org
6. www.mplib.org/history/cg4.asp/
7. American Forests. 2002. *Urban Ecosystem Analysis for the Washington DC Metropolitan Area—An Assessment of Existing Conditions and a Resource for Local Action.*

For a diversity of resources on green infrastructure concepts, practices, and educational opportunities, visit www.greeninfrastructure.net, a website hosted by The Conservation Fund and the USDA Forest Service.

Note

For an expanded discussion of this topic, please contact the authors, Ed McMahon and Mark Benedict, of The Conservation Fund's Center for Conservation and Development, 703-525-6300, www.conservationfund.org.

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This is one in a continuing series of briefing papers on how cities can use parks to address urban challenges. We hope the information here helps you to create great urban parks in your city.

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