Designing Green Stormwater Infrastructure for Human Health and Wellness

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August 13, 2018

In recent years there has been a surge of research that shows the many positive influences of having nature near homes, offices and schools. Gardeners and landscape architects have promoted nature experiences for health for a very long time. The science evidence now explains the range and degree of health benefits, suggesting that every bit of nature in the city, including Green Stormwater Infrastructure (GSI) should be co-designed for multiple co-benefits. Planners, engineers, and hydrologists – all who shape the public spaces of communities - can instill nurturing nature within communities.

Green Infrastructure for Health - Two Ideas Sources

The first report, Cascading Benefits: Designing Green Stormwater Infrastructure for Human Wellness, interprets research to offer design strategies that combine water performance with nature contact opportunities. It was produced by the City Habitats program of The Nature Conservancy, with contributions from the USDA Forest Service, Washington Department of Natural Resources, and University of Washington.

The Green Infrastructure & Health Guide considers health design and planning from an equity lens. It was produced by the Willamette Partnership and Oregon Public Health Institute in collaboration with the Green Infrastructure Leadership Exchange. It offers practical guidance from utilities departments, including suggestions from a workshop with Seattle Public Utilities.

Co-Design for Water Management and Health Benefits

Health concerns about flooding, standing water and insects, and safe plant choice are typical in green infrastructure design. In addition, the oft-used elements of GSI – rain gardens, bioswales, trees – offer opportunities for high quality nature encounters when human health is added to the project check list.

Frequent, short term experiences of nature have been associated with reduced ADHD in children, depression and mental stress in adults, and mortality in elders, as well as better mental performance, immune function and social cohesion. GSI can be thought of as micro parks, and can be designed to encourage more nature encounters. Here are ideas from environmental psychology research, place theory, and landscape design best practices:

Promote Walkable Places

Physical activity is important to maintain good health and green streets can promote walking and cycling for better health. Public health research shows that sedentary lifestyles are the new smoking. People need spaces near homes, schools, and offices where they can be out and active in their daily routines.

Introduce Prospect and Refuge

People tend to settle or sit in open spaces, whether indoor or outdoor, in predictable ways. They will generally stay near the edges, having something that is refuge at their back (a wall or landscape) and enjoy prospect – landscape views or people watching. Prospect and refuge theory can suggest where to place benches and sitting spaces.

Manage Complexity

Visual and spatial complexity plays into the appeal and comfort of a space. Remember the story of the 3 bears? We find low complexity boring and move on quickly. High complexity is frustrating as we are not able to readily make sense of our surroundings. Mid-level complexity satisfies our curiousity, but helps us to understand a setting. Complexity is an important aspect of vegetation choice and maintenance.

Offer Cues to Care

The diverse plantings of GSI are more naturalistic and scruffy than the more familiar trees and grass plantings of traditional parks and roadsides. Some people may regard biodiverse plantings as being unmanaged or neglected. A cues to care strategy involves placing cultural elements in and around a naturalistic landscape to suggest that it is maintained and appreciated. Mown edges, open fencing at edges, and the placement of seating are welcoming cues.