

Benefits of Nature in Urban Environments

by Lilla Schottner

1. Mental Health Benefits of Urban Parks and Nature
2. Physical Benefits of Engaging with Nature in Urban Environment
3. Community Cohesion and Inclusion with Nature in Urban Settings
4. Economic and Environmental Impacts on Nature and Green Development in Cities
5. Additional Benefits of Nature



1. Mental Health Benefits of Urban Parks and Nature

Parks have long been considered essential elements of city life; however, size, quality, quantity, and many other variations of parks differ from city to city as well as within cities themselves. Dating back to 1858, New York's Central Park has been a historic landmark that serves as a way for residents and visitors alike to find an oasis and connection to nature while surrounded by the dense gray infrastructure of the city (Central Park Conservancy, n.d.). In addition to giving human beings a break from highly developed city life, parks are now being understood as necessary to sustain the environment and health of the city. The Center of Disease Control (CDC) explains how city parks can have a tremendous positive impact on the physical and mental well-being of local residents (Jackson & Kochtitzky, n.d.).

Trends of urbanization and mental disorders are on the rise, and may be linked to each other (Bratman et al., 2015). While the causes of mental health in the general human population are varied, exposure to natural environments can help to reduce stress in humans and improve mental health (Cox et al., 2017). When people interact with nature, their mental health often improves and their anxiety decreases (Tillman et al., 2021, Bratman et al., 2015). Trees and other green spaces reduce the urban heat island effect, and there is "evidence that aggression increases in higher ambient temperatures up to certain levels" (Shepley et al. 2019, pg 11.). Therefore, the heat-reducing impact of green space may result in reduced crime and other social tensions.

Karjalainen et al. (2010) observed that forest visits could strengthen the human immune system. Spending more time in the forest can increase natural killer (NK) activity in humans. NK cells can kill tumor cells by releasing anti-cancer proteins; forest visits may have a preventive effect on cancer generation and development. Furthermore, a walk in a park can reduce salivatory cortisol (stress hormone) in the human body and decrease blood glucose levels in diabetic patients (Karjalainen et al., 2010).

Attention-Deficit/Hyperactivity Disorder (ADHD) is a very common behavioral disorder in children. According to Taylor et al. (2011), an estimated 4.4 million children in the United States suffer from ADHD. Research shows that most would benefit from exposure to green space and that children with ADHD who play regularly in green play settings have milder symptoms than children who play in built outdoor and indoor environments (Taylor et al., 2011).

2. Physical Benefits of Engaging with Nature in Urban Environment

A sedentary lifestyle and lack of exercise are significant threats to public health. Exposure to extensive forests has been found to improve human health, certain cognitive functions, and social cohesion (World Health Organization, 2019). It also motivates people to exercise, significantly impacting physical and mental benefits and reducing the problems of obesity. According to the Center for Disease Control and Prevention (CDC), more than 122 million Americans are living with diabetes or prediabetes, which affects the quality and longevity of life (CDC, 2022). According to the World Health Organization (WHO), insufficient physical activity is now the fourth leading cause of premature mortality, contributing to approximately 3.2 million deaths (Brymer & Davids, 2016). WHO has an action plan developed by consulting governments and involving multiple stakeholders such as health, sports professionals, and urban designers (WHO, 2019). This plan provides guidance on physical activity for 2018-2030: more active people for a healthier world.

Physical activity improves physical, psychological, and emotional wellbeing, increases concentration, reduces the risk of lifestyle diseases, relieves stress, reduces mental fatigue, reduces aggressive behavior, and enhances life skills (Brymer & Davids, 2016). Maintaining consistent physical activity can help prevent heart disease, stroke, diabetes, and breast and colon cancer (ibid.). It also helps prevent hypertension, overweight, and obesity, which are health challenges of many city residents. Investing in policies such as promoting walking, cycling, sport, active forms of recreation, for example, dancing and yoga, and urban gardening can contribute directly to achieving many of the United Nations (UN) 2030 Sustainable Development Goals (SDGs) (WHO, 2019). The images below from a park in Luxembourg City portray how simple park infrastructure can be implemented to encourage safe exercise as well as provide information about wildlife and safety.



Fig. 1. Luxembourg city park areas: trail map, signed trail, bird feeder and art work.

3. Community Cohesion and Inclusion with Nature in Urban Settings

According to the authors of *Promoting human health through forests* (2010), forests can be perceived as threatening and strange places that may cause anxiety and uncertainty; for example, childhood nature experiences may influence adulthood relationships with natural environments (Karjalainen et al., 2010). Fears or concerns can be related to humans, animals, and plants in natural areas. Lack of familiarity can cause fear of natural spaces, such as in forests. Research shows that individuals who engage with nature, hiking, and playing at a young age are more likely to feel a positive attitude toward nature as adults.

Environmental stewardship, such as tree planting (such as with the Casey Trees non-profit organization), community-organized park cleanups, trash removal, and removing any signs of neglect, gives participants pride, joy, and belonging (Sonti et al., 2020). Researchers have also known that community participation and civic pride by working toward common goals can effectively reduce violent crimes (Shepley et al., 2019).

The contribution of urban gardens to the happiness and wellbeing of urban populations has been recognized as part of the United Nations Sustainable Development Goal #2 to end hunger. Urban gardens promote social interaction and inclusion, belonging, and an increasing sense of spirituality through connecting with nature (Silva et al., 2016; DC Greens, n.d.). Connecting to nature through gardening can offer a sense of accomplishment to the participants, and urban agriculture also provides economic and ecological benefits to city residents (FAO, 1996). Urban agriculture is often more about the community than only about gardening. Gardens offer places where people can gather, network, and identify as residents of a neighborhood (Silva et al., 2016).

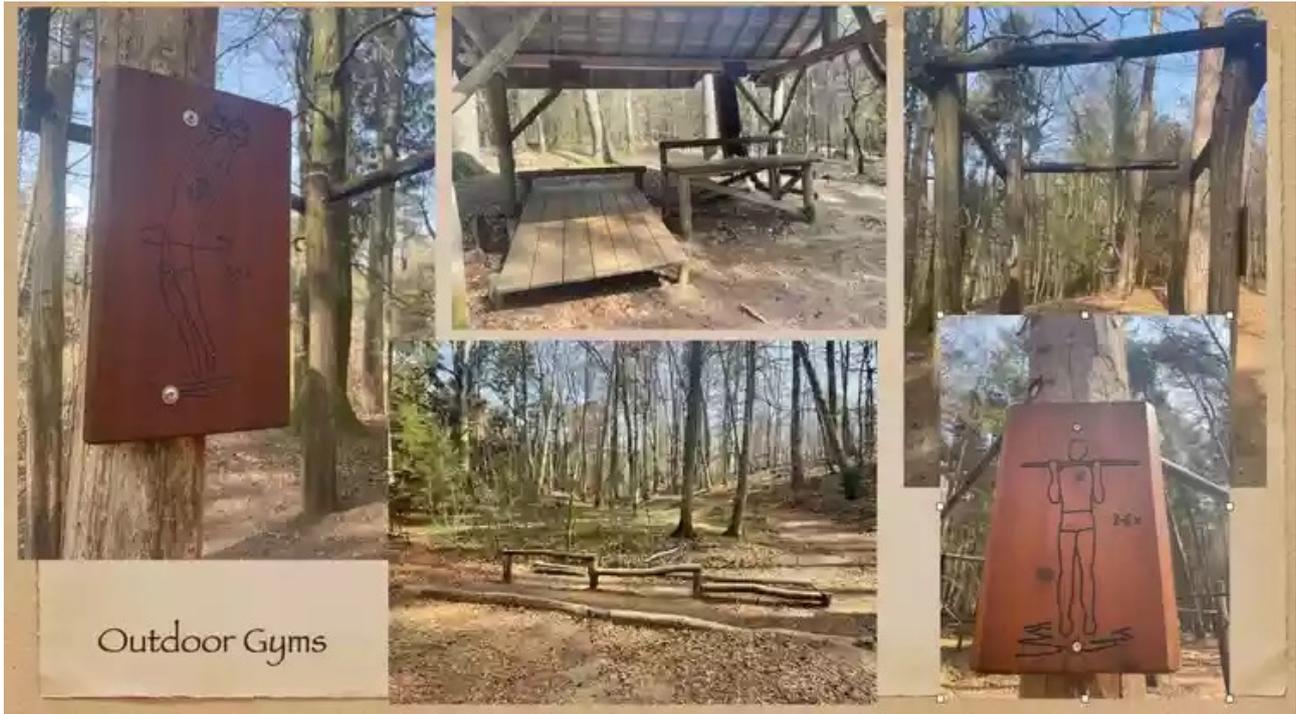


Fig. 2. Luxembourg city park areas: outdoor gym on trails.
The photographs were taken by Lilla Schottner on nature walks in Bambosch, Luxembourg city.

4. Economic and Environmental Impacts on Nature and Green Development in Cities

Growing stress among humans in urban areas as noted by Karjalainen et al. (2010) not only causes problems for individuals, but for the economy as well. Anxiety and mood disorders cost Europeans €187.4 billion (\$200B USD) annually and account for 13.7% of work-related health issues (Cox et al., 2017). In England in 2007, it was estimated that depression and anxiety alone cost the British economy £16.4 billion (\$20.7 B USD) due to health costs and lost workdays (McCrone et al., 2008). There is no simple answer to poor mental health issues, but increasing access to neighborhood vegetation cover can lead to significant economic savings.

Green infrastructure can help cities to mitigate the impacts of climate change, such as reducing landslides, flooding, and the urban heat island effect (Anguelovski et al. 2019 b). When a municipality implements green infrastructure or beautifies low-income neighborhoods, it can create "green landscapes of privilege and pleasure," but lead to the dispossession of "location, land, and social capital" for the existing residents (ibid.; Anguelovski et al., 2019 a). Low-income communities and people of color in cities are often most at risk to climate hazards and the impacts of climate change (Anguelovski et al. 2019 b). When cities implement green infrastructure to create climate resilient areas in the face of climate change, property values increase, the area receives more business investment, and more social benefits are provided for residents; however, these projects often displace low-income communities, migrant communities, and people of color, even though these populations often contribute least to climate change (ibid.). Those who promote green infrastructure development in cities must take into account residents who are in socio-economically vulnerable situations when planning and implementing infrastructure, so that the changes do not displace or exclude people based on class, race, or citizenship status (ibid.).

5. Additional Benefits

Parks, forests, and trees supply many ecosystem services that help create healthy living environments and restore degraded ecosystems. Forests mitigate climate change by sequestering carbon dioxide through trees' photosynthesis, improving air quality by depositing air pollutants to the vegetation canopy, reducing hot summer temperatures, and decreasing ultraviolet radiation. Parks also mitigate floods and droughts, lessen the effects of noise, recharge aquifers, maintain water and soil quality, and reduce erosion.

Nowak, et al. (2018) found that urban park characteristics (area, perimeter, shape) are essential when mitigating climate change and designing future urban parks. An increased park cool island (PCI) effect can be achieved by creating rounder and bigger (minimum 0.3 ha) urban parks. The size and health of the trees also matter when it comes to mitigation strategies: large, healthy trees with big crowns (leaf area and leaf biomass) have a bigger shading, cooling, and humidifying effect.

Flora and Fauna

The economic and environmental benefits of biodiversity state that pollinators, such as bees, butterflies, birds, and bats, benefit natural ecosystems. Pollinator diversity depends on ecosystems that are rich in diverse vegetation.

Recreation—Many recreational pursuits rely on our unique biodiversities, for example, birdwatching, hiking, biking, and cultural, spiritual, and aesthetic services.

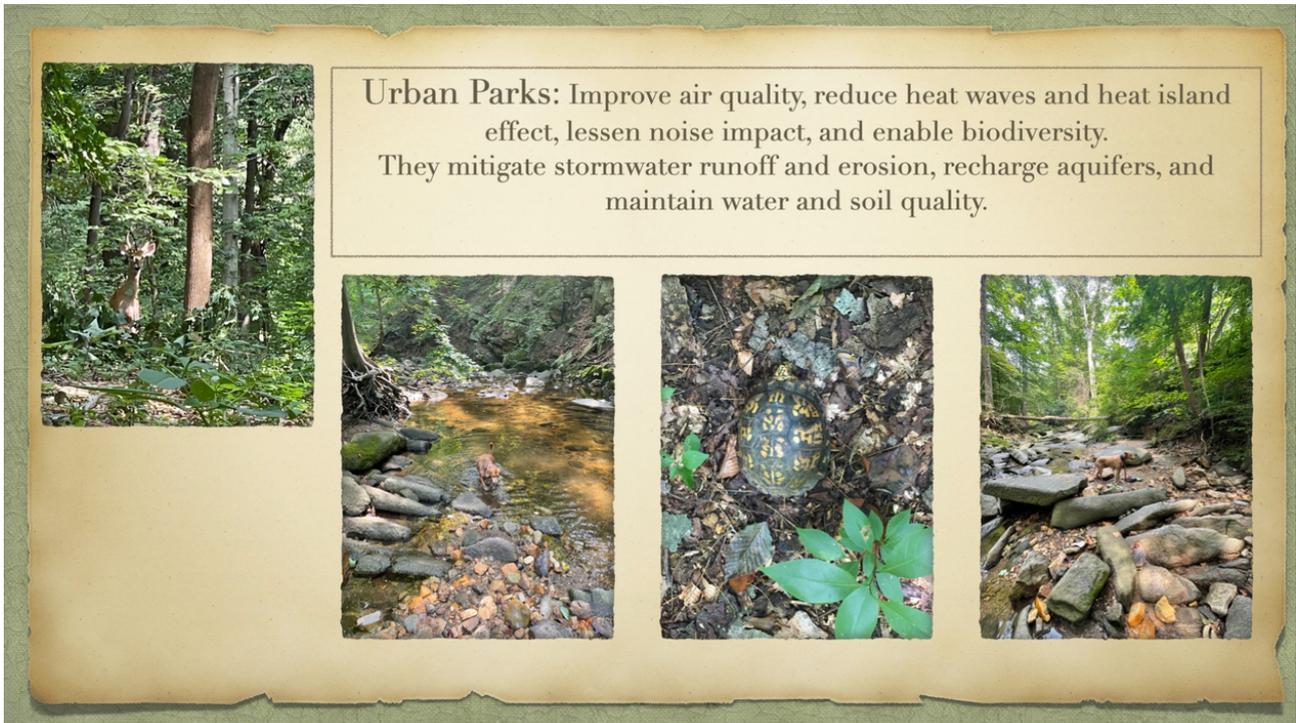


Fig. 3. Washington, D.C. Rock Creek Park

