

Play elements at Paco Sanchez Park are located along a play loop, encouraging movement from one play element to the next. The unplanned benefit of this layout is that it allows for physical distancing between play groups.





Biodiversity Lays  
the Pathway to

# Good Health

**Can a pandemic become the tipping point for connecting biodiversity with human health?**

By LaDonna Baertlein

**T**he coronavirus (COVID-19) pandemic has precipitated a utopian glimpse into urban centers around the globe, where streets are closed to accommodate al fresco dining, bike lanes are expanded, parks are full, the air is cleaner, and pedestrians are seen daily walking the streets and trails of neighborhoods. Prior to the pandemic stay-at-home orders issued in many countries, the scale of the pivotal changes in the road right-of-way and park uses could not have been imagined. Yet, here we are with cities around the globe offering this idealistic vision as we collectively adapt to increased outdoor activities and spillover from commerce into our previously auto-dominated streets.

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### The Interconnection Between Health and Biodiversity

A lesser discussed, but equally important, aspect of healthy cities is the role biodiverse landscapes play in promoting health. An April 2019 article in *Frontiers Science News* ([tinyurl.com/y42m4me4](https://www.frontiersin.org/articles/10.3389/fnsci.2019.00042/full)) states that *urban biodiversity reduces chronic disease*. Humans and microorganisms have a symbiotic relationship that relies on ecosystem fitness and biodiversity for optimal health outcomes. Restoration of biodiversity within our urban systems could help address chronic health problems, while restoring native plant communities to urban areas can

promote multiple co-benefits. As we repurpose our streets, expand park spaces and transform underutilized spaces to support recreation and leisure activities, we must pay equal attention to integrating biodiverse landscapes and restoring healthy soil biomes in these places.

Not only are parks and open spaces individually important components of urban greening and biodiversity, but also these spaces are linked into an interconnected biodiverse system. We have the opportunity as we rethink our streets' right-of-ways and allocate new uses to support commerce, mobility and open space, and make biodiversity an equally important priority. Increasing the urban forest and understory plantings, and weaving connected native habitats along trails, river corridors and rooftops should be public realm priorities, so humans, plants and animals can coexist in ways that promote health for all.

An example of streetscape biodiversity interventions was under-

taken by the city of Melbourne, Australia, ([tinyurl.com/y5v5tbh6](https://www.tinyurl.com/y5v5tbh6)) between 2017 and 2019 with continuing program monitoring. A key goal of this study was to increase understory plants on land managed by the city to support bat, bird and insect communities. On four streetscapes, indigenous plant species were installed with a goal of promoting biodiversity and connectivity, and to test ecological outcomes and plant performance against similar control sites. This pilot project was undertaken as part of the Nature in the City Strategy ([tinyurl.com/y52b6eek](https://www.tinyurl.com/y52b6eek)) to create a more supportive and ecologically connected urban landscape. These native plant installations provide added benefits of being able to tolerate arid western climates, and as reported by *Proceedings of the National Academy of Sciences* ([tinyurl.com/yxolmc9g](https://www.tinyurl.com/yxolmc9g)), reducing urban heat index more than trees alone. Evidence-based trial projects like this should be undertaken on a wide-scale basis to inform priorities, document research, and inform public and private spending decisions that benefit biodiversity.

### Converting Existing Parks to Ecologically Supportive Landscapes

In Denver, Colorado, the parks department recently established a Resiliency Planning team, which is adapting landscapes from the early 20th century *City Beautiful Movement* of park design into a 21st century *Eco-Beautiful Movement*. Their

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Grant Pearsell shared lessons learned from 20 years of implementing biophilic measures in Edmonton, Alberta, Canada, at an 'Urban Greening and Biodiversity Forum' held by Dig Studio in March 2020.



PHOTO COURTESY OF VIENNA VITEK

Larimer Uprooted serves as both a green space for the public to enjoy and a productive farm offering fresh produce to the community.

work is cut out for them. “Denver Parks and Recreation is the highest user of Denver Water,” says Cinceré Eades, parks resiliency principal planner. Eades recently led the development of the *Denver Landscape Typology Manual* ([tinyurl.com/yyrng5ck](https://tinyurl.com/yyrng5ck)), which outlines how Denver Parks can convert irrigated bluegrass landscapes into combined bluegrass, adapted low-water and riparian landscapes. Another major effort being spearheaded by the city of Denver and the Downtown Denver Partnership is an urban forest initiative ([tinyurl.com/y673quze](https://tinyurl.com/y673quze)). With only 4 percent current tree canopy coverage, the goal of this pilot program is to move the city to 10 percent coverage, while monitoring and assessing longer term impacts on health, cooling and air quality.

### Connecting Biodiversity with Private Development

We learned early on during the pandemic that food supply chains quickly would be impacted by global shockwaves. Urban agriculture is one way to integrate vegetation into urban environments while also increasing self-sufficiency in our food supply. Integrating urban farms into building facades, parks, terraces, rooftops, parking garages and vacant lots helps increase local food access while opportunistically greening these typically devoid spaces.

Developers striving to implement urban greening measures within their projects can face unforeseen challenges in implement-



PHOTO COURTESY OF KATE ROBINSON

ing these initiatives. For example, developer Urban Villages wanted to install a rooftop garden on a parking garage in Denver and found there was no zoning for privately owned urban farms. Grant McCargo, CEO and founder of Bio-Logical Capital and Urban Villages, worked with the city to gain an exemption for urban agriculture as an accessory use for parking garages — and from that emerged Larimer Uprooted ([tinyurl.com/yyxd9a7w](https://tinyurl.com/yyxd9a7w)), a rooftop culinary garden.

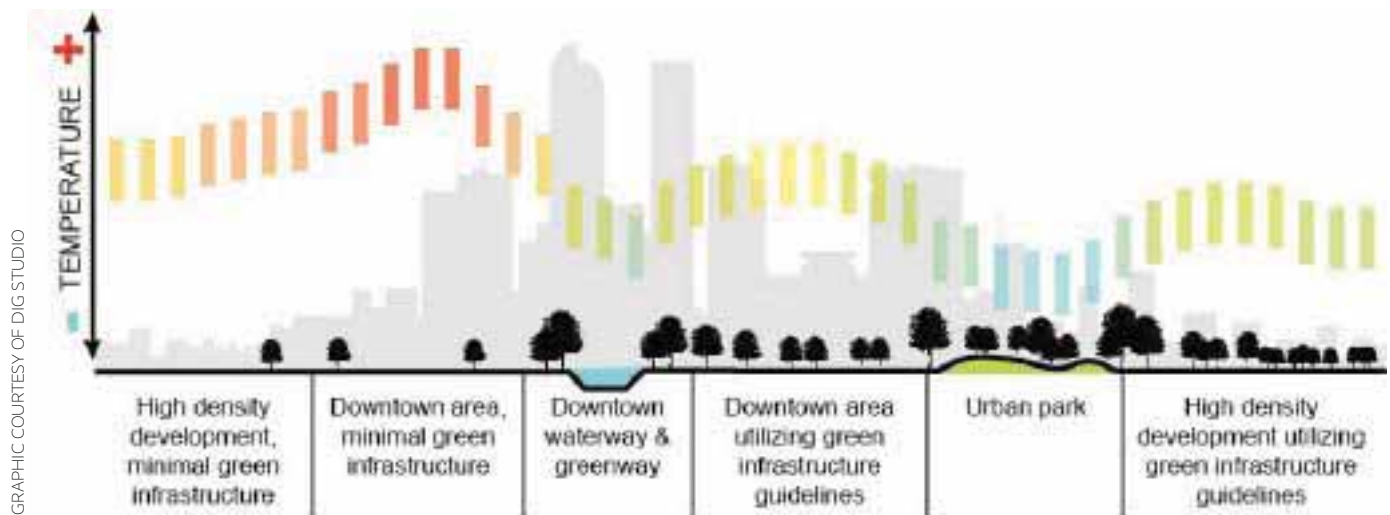
McCargo states that there are many unexplored areas in public policy where developers and municipalities are coming together to “figure it out” on issues ranging from district scale utilities in private development, use of rainwater for urban agriculture, green roof policies and greening alleys. He recommends that cities “foster an urban greening movement” by becoming less rigid, supporting innovation and allowing urban greening to occur without as much process and regulation. “If you can help developers be more creative and innovative, everyone involved will benefit,” says McCargo.

### Health and Equity

Health and equity go hand-in-hand. Inequity in the distribution of the urban tree canopy and open space has been brought into the spotlight during COVID-19, where communities of color and lower income have been hardest hit by the disease. These neighborhoods are more likely to lack parks and green infrastructure and are where recreation and heat island reduction often are most needed.

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Denver’s health equity index ([tinyurl.com/y6hnn93n](https://tinyurl.com/y6hnn93n)) is one tool that has been used to identify neighborhoods with the highest hurdles to leading healthy lives, and the city has been investing in those neighborhoods with new parks and trail connections. Improving community health through equitable



Planting more trees and improving riparian buffer areas are examples of how the city of Denver, Colorado, is working to reduce heat island effect. These strategies are included in the *Denver Landscape Typology Manual*, a document helping to guide design, planning and maintenance decisions, in order to establish high-functioning, low-maintenance ecosystems.

access to parks was the primary goal for the city's investment in Paco Sanchez Park ([tinyurl.com/yya4yfjm](https://tinyurl.com/yya4yfjm)), designed by Dig Studio and completed in August of 2020. An analysis undertaken by the city pointed to the high need for facilities that could help modify the behavior and expand social opportunities for nearby residents in this low-income and historically underserved area.

Paco Sanchez Park received partial funding from the Colorado Health Foundation, and the parameters of the grant required a pre-design study of the health impact the revitalized park would

have on the surrounding neighborhood. "Getting people of all ages moving was the primary goal of the design of Paco Sanchez Park," notes Heather Runkel, City and County of Denver Park and Recreation project manager for Paco Sanchez Park. "One of the best benefits of collecting usage data before and after the park improvements were implemented is that it will provide quantitative data to guide the city in making future park investments."

### History, Equity and Climate Change

The National Integrated Heat Health Information System ([tinyurl.com/j6sc8mc](https://tinyurl.com/j6sc8mc)) outlines a host of health impacts from extreme heat, such as asthma, diabetes and high blood pressure, and states that in the United States, it already is deadlier than all other natural disasters combined. Research and data over time have led us to understand that the warming climate is concentrated in areas characterized by low-income and people-of-color neighborhoods. Research conducted by Jeremy Hoffman ([tinyurl.com/y6tq2o89](https://tinyurl.com/y6tq2o89)) points to correlations between areas of historic redlining

and increased heat as compared to surrounding areas. This was particularly noted in places, such as Richmond, Virginia; Portland, Oregon; and Denver, Colorado, where differences of 12 degrees or more were found in redlined neighborhoods.

The lack of investment in tree-lined sidewalks and parks, and the increased influence of impermeable surfaces from industry, highways and warehouses left redlined neighborhoods much warmer, with few places to escape the heat. In a *New York Times* article ([tinyurl.com/y2knebcu](https://tinyurl.com/y2knebcu)), a resident of Richmond, Virginia, describes walking more than a half mile across town to a park with shaded trees because her local playground lacks shade. The solution of integrating more parks and trees in redlined neighborhoods is a part of the solution to solving resident inequities, but also comes with challenges in that these investments also can lead to accelerated gentrification.

### Quality Over Quantity: Weaving Parks into the City Fabric

As urban populations have significantly increased over the past

**Integrating more parks and trees in redlined neighborhoods is a part of the solution to solving resident inequities.**

two decades, many cities share the problem of having a shortage of per capita open space or having accessible open space within a 10- to 15-minute walk. This often complicates the challenge of extending open space equitably among neighborhoods. Creative interventions are making national headlines, highlighting projects that utilize parking lots, medians or underpasses for parks. And, parks don't necessarily have to be the large swaths we may be accustomed to, but may be smaller areas more focused on providing relevant amenities for a given neighborhood. As an example, the eight-acre Chicano Park ([tinyurl.com/y5qjnvvy](http://tinyurl.com/y5qjnvvy)) in San Diego, California, establishes a point system that values park features, instead of solely focusing on park acreage.

## Implementation

In the spirit of 'roll up your sleeves' solutions during this messy time of responding to the pandemic, adapting new ideas into how improvements within the public realm are typically done can be embraced. How do we create a tailwind of support for biodiversity and urban greening initiatives? Dig Studio held an Urban Greening and Biodiversity Forum offering perspectives on this topic from a panel of national speakers. One of the presenters, Grant Pearsell, urban biodiversity strategist and retired urban planner, city of Edmonton, Alberta, Canada, shared implementation lessons learned over the past two decades from city-led initiatives to become a biophilic city. Many of these lessons can be informative elsewhere: *Don't let regulation stifle innovation* — city regulations must be adapted to the spe-

Interventions like this street closure on 21st Street in Denver have taken place all over the country, providing opportunities to integrate popup parks in neighborhoods lacking access to parks and open spaces.

cific situation; *Don't let operational costs be an afterthought* — bring operational people in at the beginning of the design process when a non-traditional green infrastructure system will become their responsibility to maintain; *Be mindful of market realities* — if a sustainable community development proposal is outside the attainability of most residents, it is not practical; and *Create tools to alleviate process bottlenecks* — such as Edmonton's Wildlife Passage Engineering Design Guidelines, which have been utilized to build 37 wildlife passages.

## Making Biodiversity a Collective Priority

In the words of urban resilience expert Michael Berkowitz ([tinyurl.com/y5u4jfvw](http://tinyurl.com/y5u4jfvw)), "To build resilience, the trick is linking different goals together." When thinking about economic development, how can we also better protect for floods? When thinking about mobility, how can we increase biodiversity or reduce exposure to extreme heat? Simply put, how can one intervention strengthen a city across a variety of areas?

Often following a crisis there is an enhanced trend of goodwill and community spirit. This opens unprecedented opportunity for a collective commitment to urban greening and biodiversity measures. People will live with our choices today for generations to come. Let's seize this opportunity to align the lens of public health and equity with biodiversity in projects involv-



PHOTO COURTESY DENVER PARKS AND RECREATION



PHOTO COURTESY OF WIKIMEDIA CREATIVE COMMONS

Chicano Park was created from reclaimed land beneath the San Diego-Coronado Bridge. The park hosts the country's largest collection of outdoor murals.

ing flood control, open space and economic development. Let's include health within our discussions about climate change and resiliency. Let's explore and share creative ideas about urban greening. Now is our time to think strategically about urban greening and biodiversity as our collective priority for the future of public and environmental health.

*Tune in to the December bonus episode of Open Space Radio to hear more from LaDonna Baertlein and Laurel Raines, a senior principal at Dig Studio, about health and biodiversity at [nrpa.org/DecemberBonusEpisode](http://nrpa.org/DecemberBonusEpisode).* 🌿

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