BIOPHILIC CITIES

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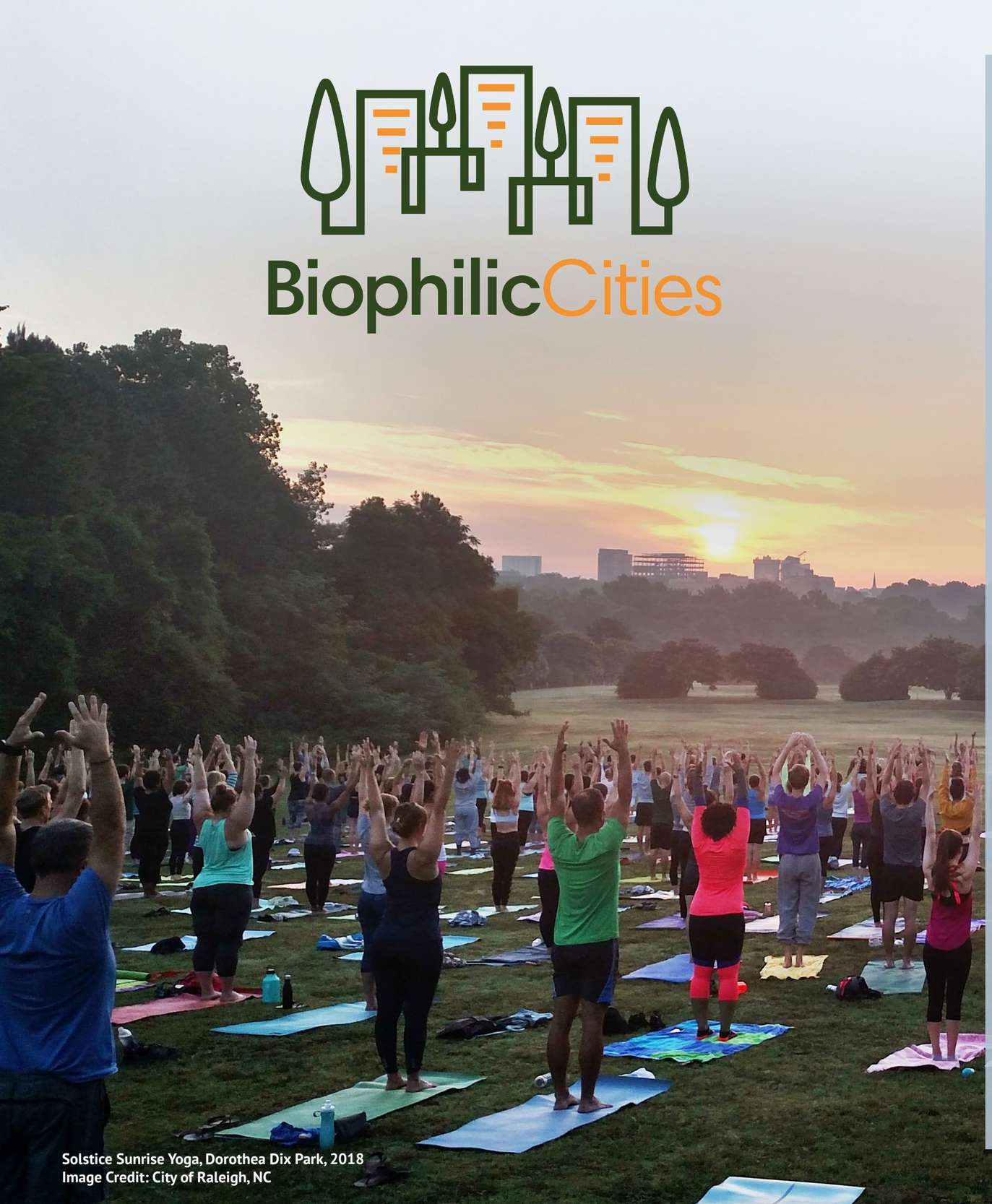
BiophilicCities



Solstice Sunrise Yoga, Dorothea Dix Park, 2018
Image Credit: City of Raleigh, NC

The Biophilic Cities Journal is produced by Biophilic Cities, which partners with cities, scholars and advocates from across the globe to build an understanding of the value and contribution of nature in cities to the lives of urban residents. As a central element of its work, Biophilic Cities facilitates a global network of partner cities, organizations and individuals working collectively to pursue the vision of a natureful city within their unique and diverse environments and cultures. The participants in the network are working in concert to conserve and celebrate nature in all its forms and the many important ways in which cities and their inhabitants benefit from the biodiversity and wild urban spaces present in cities.

Many individuals and organizations are due thanks for helping to produce the Journal. We owe special thanks to the Robert Wood Johnson Foundation and the Summit Foundation for their generous and continuing financial support for Biophilic Cities. We also thank the University of Virginia School of Architecture for hosting and supporting Biophilic Cities in many ways.

For more information on Biophilic Cities, and to learn about ways to become involved in this global movement, please visit us at BiophilicCities.org.

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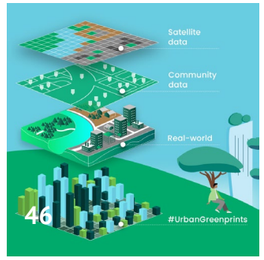
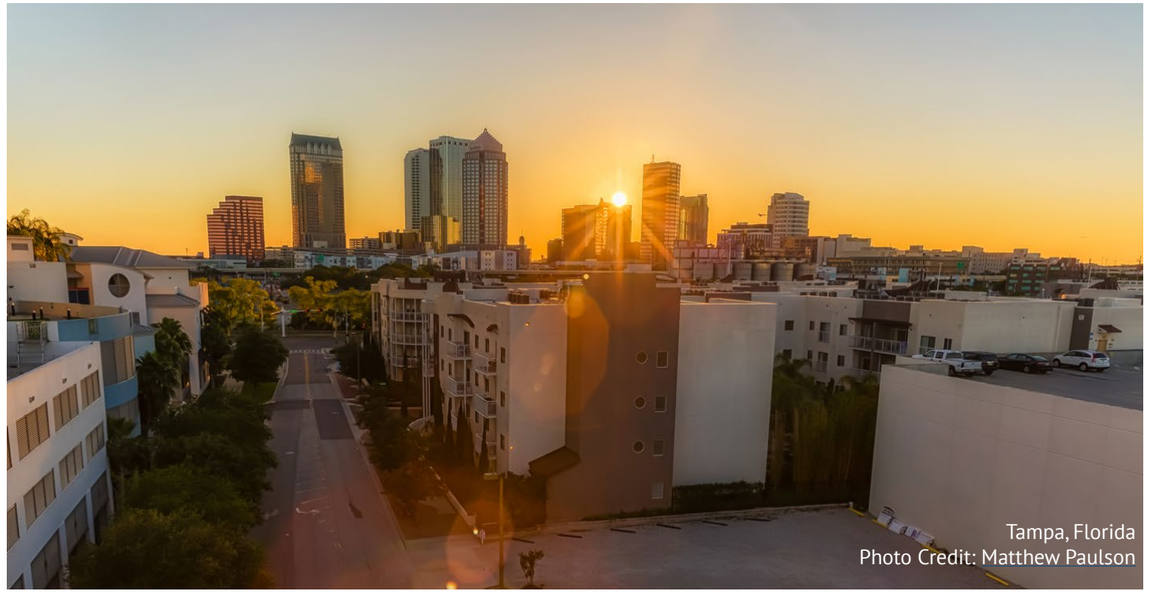
Image Credit: Kevin Sloan Studio



SAVE THE DATE FOR MARCH SYMPOSIUM AT THE UNIVERSITY OF VIRGINIA!



Tampa, Florida
Photo Credit: Matthew Paulson

The Natureful City: Special Expressions of Nature

By Tim Beatley

Chelsea Johnson remembers well when she got word that the homebuilders association in Tampa was trying to push through changes in the city's iconic tree protection ordinance. These changes would have made it much easier for developers and homebuilders to cut and clear trees that stood in the way of new construction. Put another way, it apparently would allow "clear-cutting" on residential lots. The proposal seemingly came out of nowhere.

Johnson was the president of the South Tampa Neighborhood Association and, as she explained to me in a recent phone call, was not especially knowledgeable about trees or the city's tree protection ordinance when she heard about the eleventh-hour proposal. However, she did know that trees were an essential part of the quality of life in Tampa and an especially important part of the beauty of her own neighborhood.

Chelsea Johnson quickly responded to the alerts she heard about the gutting of Tampa's tree code, and she managed to stop this proposal in its tracks. She soon became deeply immersed in efforts to more carefully update and revise Tampa's tree code, which has been on the books since 1972. She founded the local group Tree Something, Say Something to engage and organize citizens but also to negotiate a practical compromise with the homebuilders pushing to eliminate the tree code. Holding weekly meetings around her dinner table, Johnson has become the face of tree protection in Tampa.

The value of trees and other urban ecosystems extends far beyond aesthetics of course. Heat is the most deadly weather-related killer. Trees reduce the urban heat-island effect, lower cooling costs, provide wildlife habitat, absorb climate-changing carbon dioxide, reduce flooding and help recharge groundwater. They are just one of the many ecosystem services that natural environments can provide in cities, usually at no cost to taxpayers. Recognizing their importance, many cities are putting nature back to work and making natural systems a high priority in urban design and planning. And they are recognizing the essential life-enhancing value of nature and its role in creating meaningful and flourishing lives.

For Chelsea Johnson that meant working to find a reasonable compromise that would allow for the protection of trees but also some development flexibility. She started convening weekly discussions with developers and environmentalists around her dining room table that eventually led to a new ordinance, adopted by the Tampa City Council in April of 2019. It is a story that shows the power of grassroots activism, the benefits of bringing sometimes warring community factions around a table, and the enduring power that trees and other forms of nature have to deeply enhance the quality of our lives.

The rest of the story is not so optimistic. Some weeks later the conservative-leaning Florida state legislature adopted a law that included a prohibition of local tree protection laws such as Tampa's. It seems immensely undemocratic, that distant legislators can overturn the animated will of local residents to create the kind of community they wish, but it illustrates the kinds of obstacles faced in protecting local nature and in advancing biophilic cities in the US and around the world.

A similar twist to this tree story can be found in recent months in Toronto. I spoke with Brian Brisbin, a biophilic-oriented architect who has designed a new kind of forest tower. There is more detail in the lead story below, but he and his urban forestry advocates see such towers as an essential element in reaching that city's tree canopy and climate goals. The first of these forested towers—a project called Designers Walk—has recently been approved, but only after months of opposition from the city. Indeed, as Brisbin explained, the high-rise tower became something the residents' association strongly supported, actively pushing the project's approval. This is interesting and unusual given the typical NIMBYism that prevails.

Tampa, Florida
Photo Credit: Michael Cutillo

"We're excited, we're approved, we're going forward," Brisbin told me this summer. It is a structure that, if the renderings are any reasonable indication, will deliver new forms of nature not just to residents but to the surrounding community. Residents will see "a terraced hillside community of trees," which is why they have been very adamant in their support of the new development. This project shows clearly that biophilic design is something that can overcome the typical opposition to increased urban density.

One of the most inspiring places where density and nature are both accommodated is Paris, and in June we had the wonderful chance to see the fruition of months of planning by David Maddox and his team of volunteers for the Nature of Cities Summit, a four-day conference, which Biophilic Cities joined as a sponsoring organization. It was unlike any conference I have been to, with plenary keynotes replaced with conversations and dialogue.

There was an emphasis on the many ways of understanding and appreciating nature—from poetry and literature readings to art and music. It was an intensely interactive and participatory conference, with every smaller session an opportunity to work together on something. On one day, I found myself tracing a poplar leaf onto a large wall-sized mosaic (a leaf I had brought from Virginia) helping to draw a kind of global tree of life.

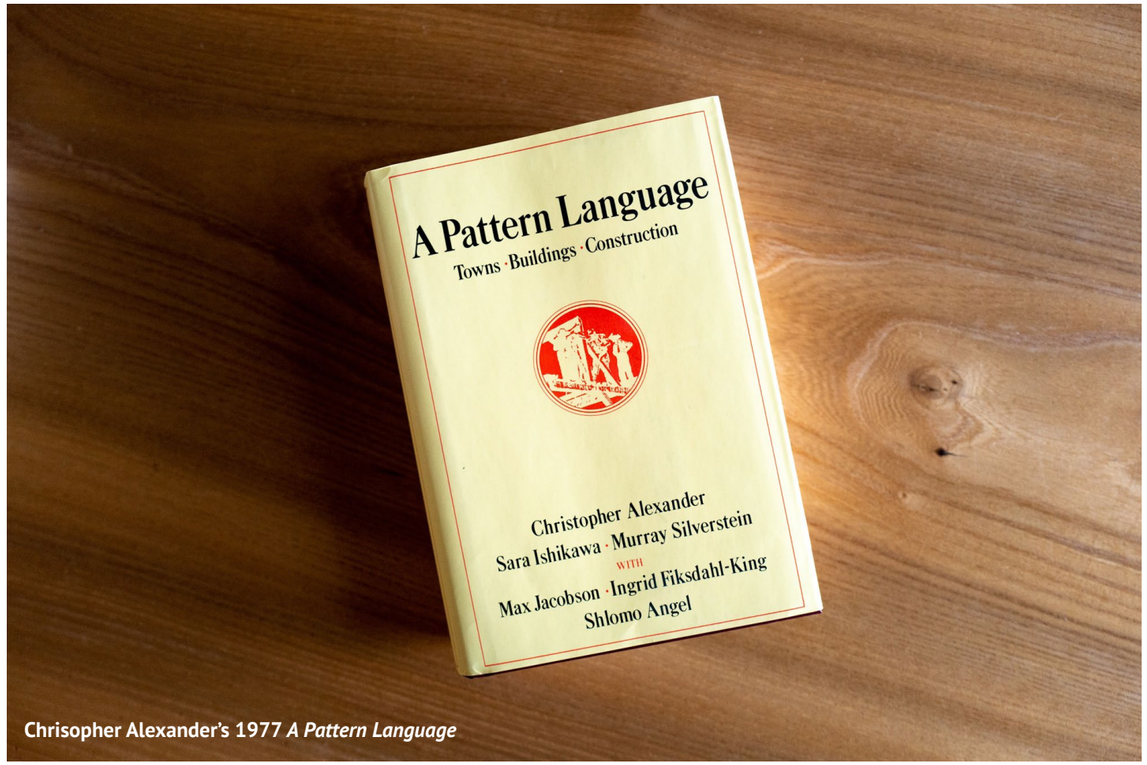
Biophilic Cities had a hand in organizing several workshops including one focused on the Biophilic Cities Network and another around the idea of Blue Urbanism, how coastal cities can begin to better connect with the marine world around them. One of the things that makes a meeting like this so exhilarating is the appreciation that there are many other people and organizations working on behalf of urban nature: from NYC Nature Goals 2050 in New York City to the National Park City vision embraced by London to efforts at creating greenspaces and parks in Mumbai and Shanghai (among many other efforts in many other cities).

Plant Giveaway in Paris, France
Photo Credit: Tim Beatley

Spending time in Paris is always a joy and always inspiring. The city continues to push the needle announcing several new initiatives to bring more nature into the center. Paris has admirably engaged the public in this process of growing more nature in the city, including planting trees. One particularly striking method is to create a sort of raised bed planting box around the base of trees, something I have been calling a "Tree Garden." The garden usually includes the names of one or more Parisians who have agreed to take on the duty of caring for these trees and plants.

On another day, I happened to witness a street spectacle that to me was a bit of an epiphany. As I walked along one street, on my way from hotel to conference, there seemed to be something of a commotion ahead, as people were hurriedly and excitedly grabbing small plants from a tall rolling platform. Sedums and many other kinds of plants were, I learned, being given away that day for free. These hundreds of plants had been left over from a recent plant sale, and were being snatched up mightily fast and with remarkable energy and enthusiasm.

I came away thinking to myself how a city might similarly create a plant give-away and how cost-effective it would be to invest in a few hundred (or a few thousand) of plants. Could we even imagine that one of the legitimate and important functions of a municipal government might be to grow and distribute plants to those residents needing or wanting them--the benefits in enhancing mood, cognition, and reducing stress, suggest that it would be a strategy that would deliver a high ratio of value-to-cost and would be one small element of response to growing levels of depression and anxiety. I found out later that the plants being given away were leftovers from an interesting initiative called Plantes Pour Tous (Plants for All), started by a couple of landscape gardeners who saw the need to grow and sell houseplants inexpensively, something they now do on multiple weekends each year in some 14 cities in France (at what they call Grande Ventes, or Big Sales). On that day on a street in Paris, I found myself equally engulfed in this botanical excitement and did myself take a plant. I carried it carefully the several miles to the conference venue where it become a part of the official (and meager) greenery there.



Chrisopher Alexander's 1977 *A Pattern Language*

My time wandering around Paris helped solidify an interest in more systematically exploring the unique and special expressions of nature that exist in every city—the special ways that nature emerges or manifests and the particular ideas a city or a neighborhood pursues to bring that nature to life. Inspired by Christopher Alexander's groundbreaking 1977 book, *A Pattern Language*, we have embarked on a journey to unearth and share global biophilic city nature patterns.

I became acquainted with the power of Pattern Language back in graduate planning school at the University of Oregon, where for a time I worked on a housing study for the Confederated Tribes of Warm Springs. I discovered Alexander's book in the UO library, and his idea seemed well-suited as a framework for exploring different housing ideas and policies.

Others have been equally inspired by the idea of Pattern Language. We now have the wonderful (and wonderfully useful) set of 14 Patterns of Biophilic Design from Bill

Browning and Terrapin Bright Green. Other colleagues, including Professor Phillip Tabb of Texas A&M have been discerning and writing about the biophilic patterns uncovered in particular places, such as the community of Serenbe, near Atlanta, Georgia, which is the location of the annual Biophilic Leadership Summit that Biophilic Cities co-hosts. Finally, there is Peter Kahn and his colleagues at the University of Washington, who have been equally inspired by Alexander, working to capture lost experiences of nature, patterns they refer to as A Nature Language.

Building on this wonderful work we have recently launched a new initiative to generate and publish online our own set of Biophilic City Patterns. Our effort will hopefully lead to a kind of crowd-sourced global pattern book. It will at once provide inspiration, demonstrate the value and reach of biophilic cities, and share practical ideas for how a city can become more natureful. We have developed a simple template for preparing (including naming, describing, illustrating) a candidate pattern, which will allow the submittal of unique and repeating patterns from partner cities around the world.

As the Biophilic Cities Network continues to grow, we will continue to explore the creative ways we can share insights and ideas and tell the stories of what cities around the world are doing. We continue to tell these stories through filmmaking, for example, and there are now several additional short films on our web page since my last writing. Several of these focus on inspiring stories of efforts to protect and celebrate bird life in cities, including efforts in Atlanta to make that city more bird-friendly. September saw the publication of a groundbreaking study by researchers at the Cornell Lab of Ornithology, documenting a shocking decline in the number of birds in North America. Compared to 1970, there are an astounding 3 billion fewer birds found in North America, representing a nearly 30% decline. It is a depressing study but perhaps a clarion call for cities to step forward in all ways possible to reduce the hazards and expand the habitats available to birds. Profiling the remarkable work being done in cities such as Portland, Phoenix and Atlanta, is one positive step in the direction of showing what is possible.

As we approach 2020, we hope to expand further these efforts at sharing stories, but also to expand the tools available to cities. We hope as well to continue to expand the number of participants in our Network--individuals and organizations as well as city governments. The citizenry and civil society of biophilic cities will, we believe, be as important, perhaps more so, than official structures of city governance. It will ultimately depend on people like Chelsea Johnson, who see the chance to make a difference for nature in their communities, and who step forward, even at great personal cost and sacrifice (especially of time). There will likely always be unforeseen obstacles--for Tampa a recalcitrant state legislature that sees little need for trees or for the local self-determination to preserve them—but it will ultimately be the force of will and the commitment to a natureful city that such individuals and groups exhibit that will turn the tide.

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Nature of Cities Summit
Photo Credit: Tim Beatley

Plymouth Hoe from Staddon Heights
Image Credit: Nilfanion

Transforming Our Coastal Cities into Ocean Cities: An Urgent Call for Action

By Simon J. Pittman & Katherine Moseley

We are living in extraordinary and transformative times experienced nowhere more dramatically than the fastest growing urban habitat on this Blue Planet—coastal cities. By 2030, approximately 5 billion of the world's 8 billion residents will live in urbanized areas with more than half of the global population living within 100 km of the coast. Whether growing upward or outward, or both, the impact of coastal cities on the ocean and consequently the entire planetary system is huge and intensifying. In regions of rapid population growth, some coastal towns have become megacities in just a few decades with dire consequences for the health of the city seascape.

The UN estimates that cities consume 78 percent of the world's energy and produce more than 70 percent of greenhouse gas emissions. Collectively, the 10 cities (eight of which are coastal cities) responsible for the greatest greenhouse gas emissions contribute more carbon dioxide to the atmosphere than all of Japan. (Moran et al., 2018). Accelerated global emissions of atmospheric carbon dioxide have increased the severity and frequency of marine heat waves and powerful storms, and are driving fundamental changes in ocean chemistry and species distributions.

As cities expand upward and outward so too is the ocean expanding as the planet continues to warm. By 2050, over 570 low-lying coastal cities will likely face a 0.5 meter rise in sea level putting over 800 million people at risk from flooding and costing at least $1 trillion USD. Concerns over the atmospheric pollutants impacting ocean health are relatively new, but coastal cities have long been directly responsible for considerable chemical pollution of rivers, estuaries and the coastal ocean through runoff and waste disposal and the more recent scourge of plastics. Industrialized city seascapes worldwide have left an unhealthy ecological footprint that extends far beyond their operational areas both in time and space.

Cities also possess great adaptive power in the face of rapid change. Through huge collective social and economic capital and an enormous capacity for technological innovation,

What makes an Ocean City?*

Ocean Cities know the ocean is precious.
Ocean Cities embrace, celebrate and cherish ocean biodiversity, and the city's cultural and spiritual relationship with the ocean.
Ocean Cities enable safe and socially inclusive public access to the ocean and enhance opportunities for activities that promote community wellbeing.
Ocean Cities give voice to the ocean through integrated civic planning, policies and practices placing ocean health and integrity at the heart of their decision making.
Ocean Cities stimulate curiosity, deepen knowledge, emotional connection and care for the ocean.
Ocean Cities ensure that all school children visit the ocean and include ocean literacy in extra-curricular learning.
Ocean Cities understand and take responsibility for impacts to the global ocean and take actions to minimise negative impacts.
Ocean Cities actively enhance biodiversity of the city seascape through restorative and regenerative actions and biophilic design.
Ocean Cities nurture marine citizenship for a more responsible and compassionate relationship with the ocean.
Ocean Cities prepare all residents for the consequences of accelerated climate change by co-creating a resilience strategy.
*Interconnected characteristics of equal importance

cities are capable of rapid delivery of creative and effective solutions to address complex challenges. Cities therefore present both a "wicked problem" and tremendous potential for efficiency in resource use. This is why cities are being recognized as pivotal places to address the climate crisis and many other socio-ecological challenges (e.g., smart cities, biophilic cities, sponge cities, circular cities). UN HABITAT describes a city as a discrete place-based nexus for tackling multiple interconnected sustainable development goals.

Global Call for Action

We contend that coastal cities are hope spots for environmentally responsible and socially progressive city living and critically important places to prioritize regenerative actions for improved planetary health. Here, we present our holistic concept of Ocean Cities together with a global Call for Urgent Action to citizens and leadership of all coastal cities. We offer suggestions for transformative ideas, feelings and actions that if enacted collectively would transform a coastal city, no matter where in the world, into an Ocean City with greater prospects for enduring community wellbeing. ***We Call for Urgent Action through our Ocean City Pledge*** (Box, opposite page) co-created with Professor Tim Beatley of the Biophilic Cities Network and refined through collective thinking during our workshop at The Nature of Cities Summit in Paris (June 2019). With delegates from twelve countries we discussed three key questions: How can we enable healthier coastal cities through blue city plans, practices and policies? How can we better connect cities and the sea for inclusive wellbeing and healthy oceans? What do we want the future relationship between coastal cities and the ocean to look and feel like? Our synthesis of this dialogue is presented here for the first time.

We propose that transformation of coastal cities into Ocean Cities along a restorative blue urban pathway to healthier, happier and sustainable city living has tremendous benefits for the future of the global ocean and the wellbeing of humankind. Longer-term holistic thinking is key. Before the climate crisis, city planning rarely considered futures beyond 25 years. This is changing. It is now increasingly acknowledged that active shaping of future trajectories by city leadership fosters external confidence in a city's management of its assets and risks making it more attractive to businesses and promoting resilience. Exploration of long-term aspirations and policy

The Ocean Cities Pledge:

Statement on the Importance of Transforming Coastal Cities into Ocean Cities
(Formulated for The Nature of Cities Summit, Sorbonne, Paris, June 2019)

We live on the Blue Planet and increasingly the Urban Planet. We recognise that the global ocean holds 97% of the life-giving water on our planet and most of us live near the ocean or near rivers that flow into the ocean.

We need healthy oceans to sustain human life and wellbeing. We recognise that urban populations benefit immensely from proximity to a thriving and healthy ocean, but our actions are continuing to negatively impact the ocean. We call upon cities to clearly and explicitly identify their impacts to the ocean and mitigate those threats.

We recognise that citizens are pivotal in transforming coastal cities into Ocean Cities where we cherish the ocean and work with the ocean to create healthier, happier and more resilient city living.

We call upon cities to take urgent transformative actions in support of the global ocean and to rapidly progress towards a more harmonious relationship between citizens and the sea.

options also brings fresh perspectives on unique local assets generating new marketing opportunities. We recognize that becoming an Ocean City has potential economic value in destination branding, but taking the blue urban pathway towards an Ocean City offers enduring benefits that flow far deeper into civic life than destination branding alone.

Global Leadership from Ocean Cities

We believe it is now time for all coastal cities worldwide to become a potent voice on behalf of the health and integrity of our Blue Planet's living system and to lead the world in global ocean conservation. Ocean Cities must walk the talk by working to regenerate and protect marine ecosystems and biodiversity. Ocean Cities must begin to include the marine nature around them in their design and planning and must work to conserve and celebrate this nature including our cultural connections. As such, Ocean Cities are blue biophilic cities where marine nature is thriving and appreciated and where we design and build in ways that foster a deeper relationship with the ocean and its inhabitants (Beatley, 2018).

Ocean Cities must work to educate citizens about the central role that oceans play in regulating climate and sustaining our Blue Planet. Knowledge about and care for oceans should be considered basic literacy for all. Citizens understand that the city is not separate from the ocean but interconnected. Citizens acknowledge the importance of the ocean in their lives, understand the city's impact on the ocean and recognize the difference they can make through collective action. From an integrated land-sea planning perspective, city maps and city boundaries could be adjusted to include ocean environments. Perhaps the natural capital and ecosystem services could be valued and communicated.

Ocean Cities seek to deepen and enhance connection with the ocean while also recognizing and working to minimize exposure of people and property to coastal hazards and sea level rise. Ocean Cities can increase resilience. Resilience comes about when a city collaboratively reviews its ability to address challenges and vulnerabilities in the face of accelerated climate change. Collective action that builds upon existing processes and activities enables cities to adapt effectively. The process of becoming an Ocean City provides a strong ocean-centric platform to unite citizens, local projects and existing priorities in a mutual vision and helps characterize a unified agenda, specifically tailored to the city's strengths and vulnerabilities. Becoming a resilient Ocean City is an iterative and inclusive process enriched by information flow from a diverse cross-section

Victoria Peak, Hong Kong
Photo Credit: Florian Wehde

of city communities while keeping the mutual vision of the Ocean City goals in sight. Programs to increase ocean literacy will ensure that citizens are well-informed of current and future environmental threats and businesses future-proof far in advance of projected impacts. Furthermore, a program of systemic transitioning to low impact sustainable practices in all sectors will promote local and global ocean health and resilience.

Healthy Cities for Healthy Oceans and Healthy Citizens

Ocean Cities recognize their place at the forefront of both human and planetary health. Ocean Cities recognize the wellbeing benefits that flow from safe access to a healthy blue space and work to enable inclusive participation in health promoting activities. Ocean Cities enable participation in stewardship and restorative activities (e.g., habitat restoration/regeneration and clean-ups of beaches and waterways) acknowledging the mutual health benefits for people and the ocean. Citizens in Ocean Cities are empowered to understand how they can help to minimize impacts to the ocean, for example, through consumption decisions that favor sustainable seafood, avoiding the use of single-use plastics, reducing emissions and taking part in citizen science monitoring projects. Citizens can call for action and increasingly will. They have the right to demand access to clean bathing waters, clean beaches, productive and diverse marine habitats and the return of charismatic megafauna (e.g., whales, turtles, seals). Ocean Cities value active citizens because they provide vital feedback to decision makers, exert pressure for reform and may even solve some problems themselves. Much of this kind of activity is already underway and growing in coastal cities worldwide. (Beatley, 2014).

Deepening Ocean Connections Beyond Destination Branding

In 2013, Plymouth in southwest England declared itself as Britain's Ocean City through a re-branding initiative to stimulate economic growth with the city's unique and internationally recognized maritime cultural roots. With growing awareness of the plight of the ocean, Plymouth has since taken another step along the blue urban pathway through the designation of the UK's first National Marine Park in September 2019. Shaped in part by the novel holistic concept of a city marine park, Plymouth is the test bed for a new city-led non-statutory marine park concept aiming to increase inclusive participation, re-invigorate pride-of-place and nurture strong pro-ocean feelings and actions through marine citizenship. Other transformative ocean health initiatives are also underway including the Plymouth Plan for Plastics resulting in the UK's first plastic-free waterfront and a range of city-wide actions to achieve carbon neutrality by 2030 following Plymouth City Council's declaration of a climate emergency in 2019.

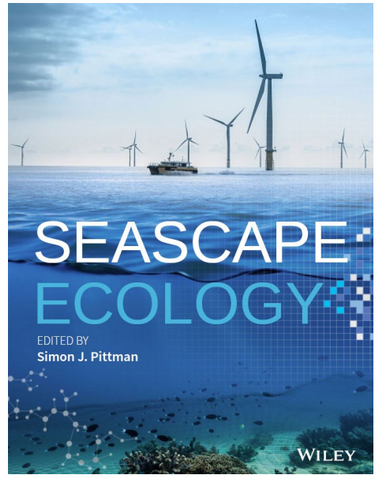
While many coastal cities are rapidly expanding, some historic port cities are experiencing post-industrial shrinkage due to demographic changes and logistical changes in the shipping industry (e.g., increase in very large container vessels), requiring an adaptive response that has in some cases resulted in regeneration of post-industrial coastal space for recreational use. Such coastal place-making transformations allow communities to regain access to restorative blue spaces that were formerly inaccessible because of industrial activities. This change in land-use also provides great opportunities for implementation of the Ocean City concept through community-centered design of public spaces to enhance connection with the ocean and bolster social resilience.

The Time for Accelerated Action Is Now

Our coastal cities are places where citizens and the sea are inextricably interwoven, yet seaside living has taken its toll on ocean health and too few cities have empowered citizens to participate in creating safe, accessible and healthy city seascapes to enhance wellbeing for the common good. Our future is in the hands of coastal cities and what we do now as citizens, and collectively as cities, will determine the planetary conditions for future generations. We offer the Ocean Cities concept as a connecting, integrating and transformational city-wide framework leading to a more responsible, healthier, resilient and compassionate relationship between people, our cities and the ocean. We invite all coastal cities to consider our Call for Urgent Action and to adopt our suggested transformational actions by pledging to become an Ocean City. It is easy to forget when we live in cities that the ocean is the heart of this planet providing life-giving processes without which the planet would be barely habitable. The time for accelerated transformative action is now.

Simon Pittman is a marine ecologist at the University of Plymouth and Director of Seascape Analytics Ltd., a UK-based marine science consultancy.

Katherine Moseley is a psychotherapist for the UK National Health Service and Director of Seascape Research CIC, a Community Interest Company.



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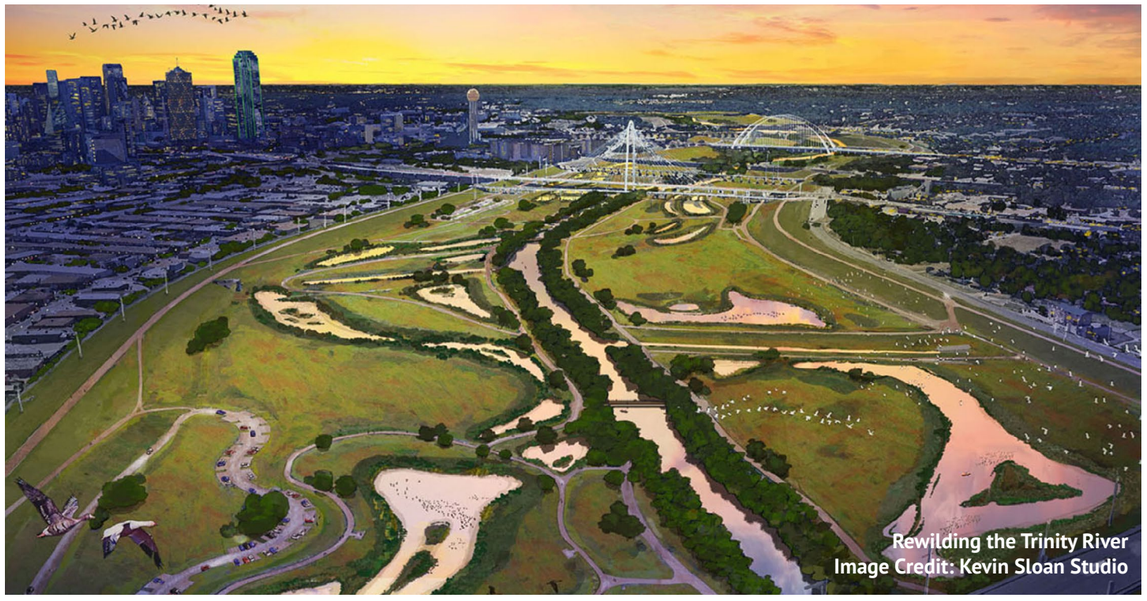

Rewilding the Trinity River
Image Credit: Kevin Sloan Studio

City By Nature:
ReWILDING the North Texas Branch Waters Network for Urbanism

By Kevin Sloan, ASLA, Honorary AIA

City in the Blackland Prairie

The North Texas Blackland Prairie is a 16-million acre ecological subset of the Great Plains that was once the largest in a series of tallgrass prairies. Originally surrounded by forests, the tallgrass prairie swept across the low hills and drier topography of a region that was interspersed by an extensive network of sheet springs, which to the eye would have looked like creeks, ravines and swales. The original grassland was taller than a human, or any animal species that lived in it. The pioneers noted how they went "through" the Blackland Prairie, never "over," nor were they ever "on" it. This was a landscape that a person inhabited just by passing through.

Less than one tenth of one percent of the original Blackland Prairie remains. (White 2006; Eidson and Smeins). It is considered one of the most endangered ecology in North America. The Blackland Prairie has been civilized.

In a 1957 issue of *Architectural Record,* two young architecture professors at the University of Texas-Austin, Colin Rowe and John Hejduk, published "Lockhart, Texas." (Reprinted in Rowe 1996). The essay made one particular case, among many, that the gridded and Greek-like planning of the Texas County Courthouse towns with their cathedral-sized courthouses conspicuously positioned at the center, was a unique invention to Texas that patterned the state in the early nineteenth century. Unbridled growth in the twentieth century merged 13 counties in North Texas into a seven-million-acre urban agglomeration that is generally known today by only two of the thirteen county seats: "Dallas/Fort Worth" (or alternatively the "DFW Metroplex" or "DFW").

When observed in satellite view, DFW reads like a multi-exposure photograph with patches of urbanism seemingly interspersed amongst the agriculture. As world cities change and expand before our very eyes, DFW is a unique case study of a new and unprecedented mega-form that offers both problems and potential. The existing pattern and form is at a scale that is statistically impossible to urbanize with "density."

San Francisco has an average human density of approximately 30 residents per acre, while the residential density of Paris exceeds 100 persons per acre and, during the workday, Manhattan spikes to 500 to 1000 persons per acre in the financial districts. In DFW, approximately 7 million continuous acres of incorporated services supports 7.5 million residents. Thus, the average human density of Dallas Fort Worth is roughly one person per acre.

The thinly settled pattern is punctuated with nodes that are building clusters. In between the clusters, the vast watershed network original to the Blackland Prairie remains as a continuous urban system of trees, deep topsoil and waterways that were too "wet" for development, too expensive in many cases to culvert or bury, but easy to bridge with streets and infrastructure. Miraculously, somewhere around 600 to 900 continuous miles escaped the twentieth century land rush.

Moreover, DFW is teaming with wildlife. Several reasons account for this astonishing characteristic. First, a city settled at one person per acre contains an abundance of space for wildlife. In addition to the abundant area, DFW is the largest city in North America that is directly on the path of the Central Migratory Flyway. These two conditions account for the unique and flourishing presence of nesting bald eagles, egret rookeries, all species of waterfowl and flocks of wild turkeys. The avian life supports predation that includes bobcats, red fox and coyotes. Most of the species traverse the original watershed network of the Blackland Prairie in DFW and much more can be done with it.

Rewilding Landscape Architecture

Rewilding is an approach to environmental design that is sweeping the world. Continental programs already exist in Europe. The UK has a national campaign and a director of rewilding who reports to the Prime Minister. Since 2013, Ireland has undertaken a national campaign to rewild its rivers, which has led to the recent news that Dublin is going to rewild Phoenix Park, the largest urban park in Europe since 1785. In the United States, The Wild Mile in Chicago is transforming a significant length of the Chicago River into a "wildlife sanctuary."

Blair Kamin, the Pulitzer Prize winning architectural critic of the Chicago Tribune notes: "Adding wildlife into a city is the next step in a revolution that's been transforming former industrial landscapes into places that are inhabitable, vital and spur economic development." Kamin continues: "what's interesting here is the notion of integrating natural systems and wildlife into recreational culture and thereby enriching both of them." (Phone interview with Kevin Sloan Studio, July 2019).

When rewilding is understood as the process of biologically and ecologically programming landscapes, what began as an ecological method to correct the environmental imbalance of large regions and nature preserves is transformed into a process that can apply to virtually any landscape, regardless of its scale or context.

A rewilding project begins by defining a program of non-human species that the project can appropriately and reasonably shelter. Not all species are appropriate for every site or project, given the circumstances

The Dallas Urban Reserve BioFiltering Street
Photo Credit: Kevin Sloan Studio

or potential conflicts of a particular context. Instead, rewilding offers landscape architects the opportunity to select, design and manage biodiversity, and to optimize the potential to reconstruct concentrations of biodiverse habitat for virtually any project and occasion. Next, the program of species generates horticultural and ecological relationships that are necessary for rewilding to succeed. Lastly, human activity is then mapped into the rewilding by design, so both human and non-human co-exist and without interference to each other.

Rewilded landscapes embrace change, unpredictability and what artists in the twentieth century referred to as "chance operations." They are nurtured to evolve, change, to "go-with-the-flow" since rewilding is ever-seeking to remain in balance as its own nature is driven to evolve. Rewilded landscapes avoid heavy maintenance as an activity that perpetually returns a project to an originating image.

Branch Water Urbanism

"The North Texas Branch Water Network" is a concept to utilize the nature of the entire watershed network in DFW as an attraction to draw, aggregate and form walkable urbanism along the creeks, streams, and springs of the watershed. The Network is a proposal that is less a master plan of totalizing ideas, and more an initiative to guide an otherwise ad hoc set of interventions, with awareness and a set of game-like rules. It is a tool and process that can manage, predict and reconstruct new urban relationships with nature. With it, we can rewild DFW and cities like it.

This is not a "new" or original idea. Segments that demonstrate the concept are already complete. Growing like sugar crystals on a string, innumerable projects have occurred along the DFW watershed network from 1911 to the present.

For example, as the only greenway proposed in the 1911 Dallas Master Plan by George Kessler that was implemented, the 7.5 mile Turtle Creek Greenway in the Highland Park area of Dallas is a one hundred year old demonstration that the nature of a Blackland Prairie ravine and sheet springs can generate culture, economic prosperity and high-rise urbanism. When the good life in Texas meant the largest house possible on a noble estate, the bucolic nature of Turtle Creek still compelled a significant population in Dallas to live in high-rise condominiums and apartments along the creek and greenway from 1960 to the present.

A second segment to consider is Vitruvian Park, a 112-acre mixed-use infill quarter for 16,000 residents in Addison, Texas, which is a city just north of Dallas in the DFW Metroplex. Begun in 2008, the planned development is an array of blocks that spatially envelop the 17-acre Branch Water Park; a public park which arose when a section of the despoiled and spring-fed Farmers Branch Creek was transformed into a public park.

To strengthen the spatial linkage between the mixed-used residential blocks and the park, the massing of the urban blocks became hybrids of space: creating tenant access to the park while simultaneously generating semi-private amenity spaces and swimming pool courtyards between that are contiguous with the public park space. Kevin Sloan Studio completed both the urban planning and landscape architecture for Vitruvian Park.

Airfield Falls Rewilded Path
Photo Credit: Kevin Sloan Studio

Case Studies

Two case study projects by Kevin Sloan Studio follow. While they were not rewilding projects when originally produced, each provided incremental discoveries as research that eventually lead to the realization of the need for ecologically and biologically programming landscape works as a first condition for design.

The Dallas Urban Reserve – 2008 to present

The Dallas Urban Reserve is a residential enclave of 50 modernist houses organized along a continuously bio-filtering street. The project repurposed 12 acres of despoiled and environmentally damaged land between a 1950s north Dallas subdivision and White Rock Creek. The biofiltering street asymmetrically slopes stormwater into a repetitive system of rain gardens that gather, process and direct water into irrigation ponds that are bridged by architecture. The asymmetry reinforces two distinct landscape edges. To handle the deluge and drought cycles of North Texas, they created a robustly planted edge of horsetail reed and cypress and a "dry" non-irrigated side that consists only of desert willow trees in museum gravel. Proximity to White Rock Creek accounts for an abundance of wildlife that has taken hold in both the existing groves of volunteer hardwoods and the system landscape of the project.

Airfield Falls
Photo Credit: Kevin Sloan Studio

Airfield Falls – 2013 to present

The Airfield Falls Conservation Park materialized when Carswell Air Force Base in Fort Worth downsized, making a relic of the original Blackland Prairie, the tallest natural waterfall in North Texas, accessible for public recreation. The waterfall was untouched by design, but the quarter mile path to it was rewilded for a program of songbirds, migratory pollinators and flocks of wild turkey. The arrival "trailhead" park is a highly designed landscape that includes a historic jet aircraft display, a water harvesting parking lot, a bio-filtering percolation field along with a family shade and picnic pavilion that marks the former location of the base commanders house. Authentic aviation lighting in the park furthers the client and Water District's agenda for water and energy conservation, and the park elements make palimpsestic references to the Cold War site history and its North American defense.

Kevin Sloan (ASLA, Honorary AIA) is a Professor of Practice in Architecture in the College of Architecture, Planning and Public Affairs at The University of Texas-Arlington.

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Designers Walk
Image Credit: BBB Architects

Designers Walk: Toronto's New Forest in the Sky

By Tim Beatley

A new biophilic tower, Designers Walk, has been approved in Toronto that will likely transform the way we design and build urban highrise structures in cities throughout North America. It is the first highrise structure in this part of the world to include terrace-level trees as a primary design element—in this sense a unique design contribution to the growing biophilic design genre of the forest tower.

I spoke recently with the building's architect and chief proponent, Brian Brisbin (of Brisbin, Brook, Beynon (BBB) Architects), who is unabashedly optimistic about this kind of design, even in a northern latitude city like Toronto. For Brisbin, the journey began with inspiration from the Milan project Bosco Verticale, the world's first example of a forested tower, and the first such design by Italian architect Stefano Boeri. Brisbin has been inspired by this project and has learned much from it, even going so far as renting an apartment in one of the buildings, and taking apart and photographing floor panels and control systems.

Brisbin believes that Designers Walk will actually improve upon and extend the Boeri model. One improvement is in the design of the terraces and the placement of trees and vegetation. The apartments at Bosco Verticale are a bit dark, he believes, and the view from the inside is a bit obstructed. As Brisbin puts it, "we still want to see the world." Brisbin describes Designers Walk as a building with "no balconies, but only terraces." The terraces are essential extensions to the interior living spaces of the units.

The trees and vegetation are designed in to an exceptional degree, another distinguishing feature of the design. According to Brisbin, "it's not a building with potted plants on balconies, it's a building [where] trees and vegetation are integrated into the structure." There are depressions in floor slabs, for example, that allow the trees to be flush with the terrace surface. It is a "much more gracious experience visually for people inside," Brisbin says.

The design innovations of this project extend to the installation and monitoring of the trees and vegetation. The tree system is described as "plug and play," allowing the trees to be easily dropped in and connected quickly. The building will host around 400 trees, and thousands of plants. The vertical forest will be owned by the condo corporation, maintained and managed by a third-party maintenance company, and carefully monitored by a research team that includes faculty of the forestry department at the University of Toronto.

The project has recently received its permits from the City of Toronto, and Brisbin estimates construction will begin within a year and a half. The project is in the construction detailing stage as well as marketing. One interesting difference from the usual way building projects like this one happen is the very positive reaction of the residents of the neighborhood in which it will sit. Rather than the usual NIMBYism (Not in My Backyard), the neighborhood association actually advocated on behalf of the project, asking the city to approve it.

In a disparaging critique of the typical towers being built in downtown Toronto, Brisbin says that "90% of these buildings are simply glass boxes." There is an unfortunate lack of texture and diversity of material in these buildings, he says, not to mention their high energy and carbon footprints. In contrast, he describes Designers Walk as something that will look like a "terraced hillside community of trees," creating a "softer and greener, more natural environment." No wonder neighbors like the design, with little concern even about the building's height (often a major sticking point for nearby residents).

To Brisbin, the terrace design is the perfect antidote to the usual sterile glass tower. In his design, the green terraces create a kind of "privacy and sanctuary," both for residents of the structure and the people looking back at it.

Buildings like Designers Walk are not only going to be more desirable visually, he argues, they will be essential if the city hopes to meet its goal of increasing forest canopy cover by 30%. There is simply not enough horizontal space left in the city, so Brisbin believes planting in the vertical realm will be essential. His forestry consultant from the University of Toronto agrees, believing the city's target would be difficult to achieve without projects like this.

Tree planting details for Designers Walk
Image Credit: BBB Architects

There are few things not to like about Designers Walk but one might be the price of the units. This is not exactly affordable housing, something I raised with Brisbin. The condo units will be expensive, and these wonderful green features will be beyond the reach of most people. Brisbin acknowledges this, but argues that the development of the green systems will be subsidized and underwritten by the pricier units: "These high-end condos will be paying for research, technology, deployment and standardization." He fully expects that the technology pioneered and tested here will filter down to mid-level housing and eventually find its way into affordable housing projects.

Brisbin has big plans for more tree towers in Toronto and is already working on two others, to be located just a few blocks away from Designers Walk. In his mind, these tree towers will serve as vertical, ecological "way points," with the potential to connect several nearby ground level or "horizontal" parks, as he calls them. These structures will quickly become essential elements in a larger urban ecology, a place for birds and insects and other biodiversity. Projects like Designers Walk will (hopefully) help to bring about an increasingly complex network of buildings, trees and parks, all in a kind of "transmigratory relationship."

It would be hard to object to the kind of building depicted in Brisbin's renderings. No wonder residents have been actively advocating on its behalf. It is always possible to lie or distort with renderings, of course, and the resulting buildings often do not match the rosy picture conveyed by plans. But, if the resulting forest tower is anything close to what Brisbin imagines it will likely be seen as a positive addition indeed--soft and green, to be sure, a hillside town of trees that should help to cool this urban setting, sequester carbon, and provide an important dose of nature to those on both sides of these tree-lined terraces.

Top: Siting for Designers Walk in Toronto and tree planting density
Above: Connection to an ecological network
Image Credits: BBB Architects

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Designers Walk
Image Credit: BBB Architects

Volunteers plant trees at restoration event hosted by TreeFolks
Photo Credit: TreeFolks

Replanting Riparian Forest Buffers in Austin through City Forest Carbon+ Credits

By Lucia Athens, Chief Sustainability Officer, City of Austin
& Mark McPherson, Executive Director, City Forest Credits

The City of Austin, Texas has declared bold goals when it comes to climate change, including carbon neutrality for city operations by 2020 and net-zero greenhouse gases community-wide by 2050. The city's recently adopted Water Forward plan sets a course to provide for the water demands of one of the fastest growing cities in the nation.

Water is a precious resource in Central Texas, and rivers and streams with healthy forest buffers are critical to both water quality and quantity — as well as vital contributors to fish, bird and wildlife habitat and our natural ecosystem. City officials struggle to balance new development to accommodate the needs of a growing city with preserving its natural assets and tree canopy, to continuing to pay for all the things needed to meet the city's policy goals and maintain the high quality of life that attracts people to the area.

Recently, the State of Texas passed legislation that severely limits the ability of Texas local governments to provide an adequate tax base to pay for needed public services such as emergency response or parks. Knowing that it will take more than city action alone to protect and preserve what's best about Austin, a committed group of stakeholders has come together to pioneer an innovation that can help ensure the health of the region's riparian forest buffers while supporting the city in meeting its carbon reduction goals.

With the aid of City Forest Credits, the Austin Office of Sustainability, the Austin Watershed Protection Department, Travis County and the local nonprofit TreeFolks are completing a pilot project and launching the Travis County Floodplain Reforestation Program to generate carbon credits from reforestation of local rivers and streams.

The key to the innovative county-wide program, which works to restore healthy forest buffers in eastern Travis County floodplains, is that it also addresses climate impacts by generating carbon offsets, known as Carbon+ Credits. These credits will be sold to the City of Austin to help meet the city's 2020 carbon neutrality goal. The pilot and program are both operated by TreeFolks and will generate carbon offsets throughout eastern Travis County on both public and private lands, in parklands, and in streamside areas known as "riparian zones." Research by The Nature Conservancy, along with fifteen other institutions, demonstrates

Example of degraded stream with no forest in Travis County
Photo Credit: TreeFolks

that more than one-third of climate mitigation needed by 2030 to keep global temperature rise below two degrees Celsius can be accomplished with conservation, restoration and better land management.

The tree planting projects will increase canopy cover and diversity in an ecosystem that needs help. The City of Austin Watershed Protection Department recently concluded that diverse wooded corridors along creeks and riparian zones here are rare. In addition, extreme weather due to climate change is exacerbating Austin's summer high temperatures, flood conditions and wildfire risk. During the summer of 2011, Austin had 90 days with temperatures greater than 100°F and wildfires destroyed 32,000 acres of forest in Central Texas. Three floods between 2013-2015 resulted in loss of life, extensive damages to homes and businesses, and displacement of many residents.

Example of healthy stream with riparian forest in Travis County
Photo Credit: TreeFolks

Investing in green infrastructure can increase climate resilience. The augmented forest density, canopy cover, and tree diversity will improve the functionality of drainage basins and their surrounding ecosystems, while also improving water quality. These plantings will provide both food and habitat for local wildlife populations and help to buffer against flood risk.

New riparian forests will also help to mitigate Austin's urban heat island. Since heat islands can affect communities by increasing energy demand, air conditioning costs, greenhouse gas emissions, air pollution and heat-related illness and mortality, this reforestation program offers multiple ecosystem and human benefits. Public trees in Austin currently remove an estimated 803 metric tons of air pollution annually, including ozone, nitrogen, particulates, and volatile organic compounds, while producing nearly 58,000 metric tons of oxygen.

The reforestation project also serves to engage local community members with the local environment, complementing Austin's participation in the Biophilic Cities network and the Children and Nature collaborative, and aligning with citywide green infrastructure efforts. Reforesting Austin's local stream corridors will create lasting change, both within the city limits and across eastern Travis County floodplains.

How Is the Project Funded?

Creating carbon credits to attract investment for tree planting is an innovative and scalable model, using the carbon market to create a financial mechanism to drive investment in green infrastructure. A key component of this initiative is the Travis County Floodplain Reforestation Program. As part of the inaugural U.S. Natural Climate Solutions Accelerator Competition, the initiative is funded in part by the Nature Conservancy with the Doris Duke Charitable Foundation. The Travis County reforestation will also include private property owners to expand the scope of the initiative. Nonprofit TreeFolks will work with volunteers and youth service organizations to plant native saplings in targeted public and privately-owned parcels. TreeFolks provides the reforestation services to private owners free of charge. These services include, for those applicants who choose to participate and are selected, free trees, free planting services, and free consultations.

In addition to the grant funding, these tree plantings will generate Carbon+ Credits issued by the nonprofit City Forest Credits, to be sold to the City of Austin to help meet its climate program and carbon-reduction goals. "I think the work is innovative and potentially game-changing. To harness the market to create environmental benefits in cities is a great thing," said Zach Baumer, climate program manager for the City of Austin who convened the initial partners to create the program.

Left & Opposite Page: Mature Riparian Forest
Photo Credits: City of Austin

Right: Plant saplings at a TreeFolks Ready Set Plant event
Photo Credit: TreeFolks

"Riparian locations contribute to local water quality improvements, stormwater reductions, air quality improvements, and energy savings."
—Thaïs Perkins, TreeFolks

Benefits Beyond Carbon

City Forest Credits makes it possible for tree planting projects in cities, towns, metropolitan areas and other urbanized areas to earn and sell carbon credits. A key innovation in these City Forest Credits is that each Carbon+ Credit quantifies more than just a metric ton of CO2. Each credit also estimates and quantifies rainfall interception (one element of stormwater runoff), local air quality, and energy savings through cooling and heating impacts.

Here's how that translates into benefits for our community: five acres of riparian plantings in the Austin area will store around 530 tons of CO2 at 25 years of maturity and generate over 500 Carbon+ Credits. At maturity, that same five acres of trees can annually intercept around 500,000 liters of rainfall per year, in addition to improving air quality and energy savings.

Using funds allocated for carbon offsets to purchase local credits from these riparian plantings keeps the City of Austin's investments localized while addressing global climate change. Previously, the City of Austin did not have local options for purchasing carbon offsets, and has supported projects in North Dakota, South Dakota, and Mississippi. All proceeds from the sale of Carbon+ Credits to the City of Austin will be exclusively used by TreeFolks for program administration and future tree plantings in Central Texas.

"This project is truly a win-win," says Thaïs Perkins, the Executive Director of TreeFolks. "The city can move forward on its climate goals, while putting its carbon offset dollars to work locally. The trees deliver the CO2 storage for a global atmospheric benefit, and the riparian locations contribute to local water quality improvements, stormwater reductions, air quality improvements, and energy savings. And that's not even counting the bird and wildlife habitat, potential recreation, stabilization of banks and slopes, and so much more."

Lucia Athens is the City of Austin's Chief Sustainability Officer, a Landscape Architect, and author of the Island Press book Building an Emerald City: A Guide to Creating Green Building Policies and Programs**.**

Mark McPherson is the Executive Director of City Forest Credits, a non-profit organization based in Seattle that is working nationally to enable local tree planting and preservation projects to earn carbon credits and sustainability certification.

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VITAE in Milan:
A Vertical Vineyard Creates a New Model of Biophilic Infill

By Tim Beatley

The design firm Carlo Ratti Associati (CRA) has recently won the "Reinventing Cities" design competition with a visionary project that will help Milan move further in the direction of being a biophilic city model. The winning design, called VITAE (meaning "life" in Latin or "vine" in Italian), will house offices and a research center and much more, including hydroponic producing greenhouses, and most dramatically an urban vineyard attached to the structure.

Biophilia is at the heart of this design. VITAE's 200-meter long vineyard wraps spectacularly around the side of the structure and serves to extend the pedestrian realm vertically, creating a green pedestrian pathway that encircles the building ending up on the rooftop. The idea is that these spaces would be open to the public, essentially providing an extension of the public streets and plaza below, allowing a pedestrian to climb to the sky.

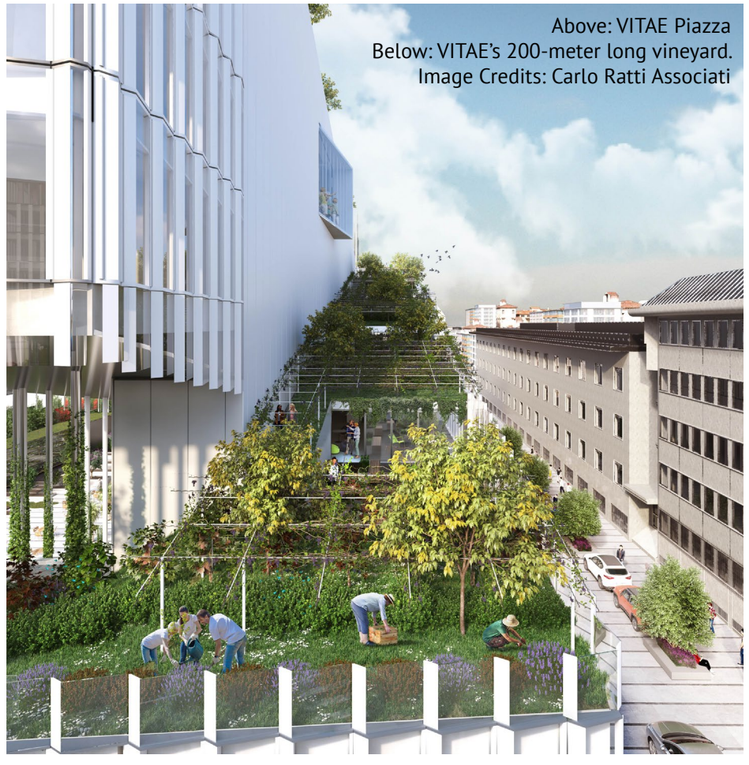
The project architect for CRA, Saverio Panata, recently described some of the things he sees as especially innovative about the project. One such feature is the vertical pathway: this "Green Spiral path," as Panata tells me, "symbolizes the DNA double helix and the encounter between research and biophilia."

The experience is one of moving through nature, walking under vine-covered pergolas, responding, Panata says, to our human desire to immerse ourselves in the natural world. There will also be a greenhouse on the ground level adjacent to a public square where the public pathway up and around the building begins, as well as green terraces on every floor.

There are other notable new urban buildings that are planning such vertical pedestrian extensions. BIG's new Spiral Tower, under construction in New York City, is one case in point, with connected terraces circling up and around the building and offering at least the possibility that these spaces may serve as an extension to the High Line that ends across the street. Undoubtedly, cities will increasingly find creative ways to at once expand civic and public spaces in the vertical realm and to ensure that such spaces are natureful and biodiverse.

VITAE also brings to mind the Jean Vollum Natural Capital Center, the Portland, Oregon offices of the environmental nonprofit Ecotrust. This restored 1895 warehouse had so many sustainable features that when it opened nearly two decades ago Ecotrust developed a "field guide" to the building, and encouraged visitors to "hike the building." Guided by icons on a map of the building, visitors could start at ground level by visiting the extensive bioswale and move up and through the building. The hike ends up at the ecoroof on its third level, where you could see, among other things, FSC-certified patio decking and good views of the surrounding neighborhood. One of my favorite features of the Ecotrust Building is the water fountain displaying a map of the watershed. I like the idea that every sip of water might be a chance to celebrate and reflect on the sustainable source of that water. This feature seemed also to capture well the larger educational value of these kinds of building "hikes." I always like the idea that we might encourage "hiking a building" and it seems this is a growing trend—there will likely be more nature along the way as we leave ground level and move skyward.

Walking through the city will now partly be about climbing, it seems, through and under a green canopy, with the chance of enjoying unique vistas and perspectives on city. The project will include other green features, including collection and reuse of rainwater and greywater, and construction utilizing wood in the upper floors. Construction on the project is to start in late 2019. Once completed, this structure will likely become as iconic as Stefano Boeri's Bosco Verticale and may similarly set in motion the design of vineyard towers in cities around the world. This would be a very good result.



Above: VITAE Piazza
Below: VITAE's 200-meter long vineyard.
Image Credits: Carlo Ratti Associati

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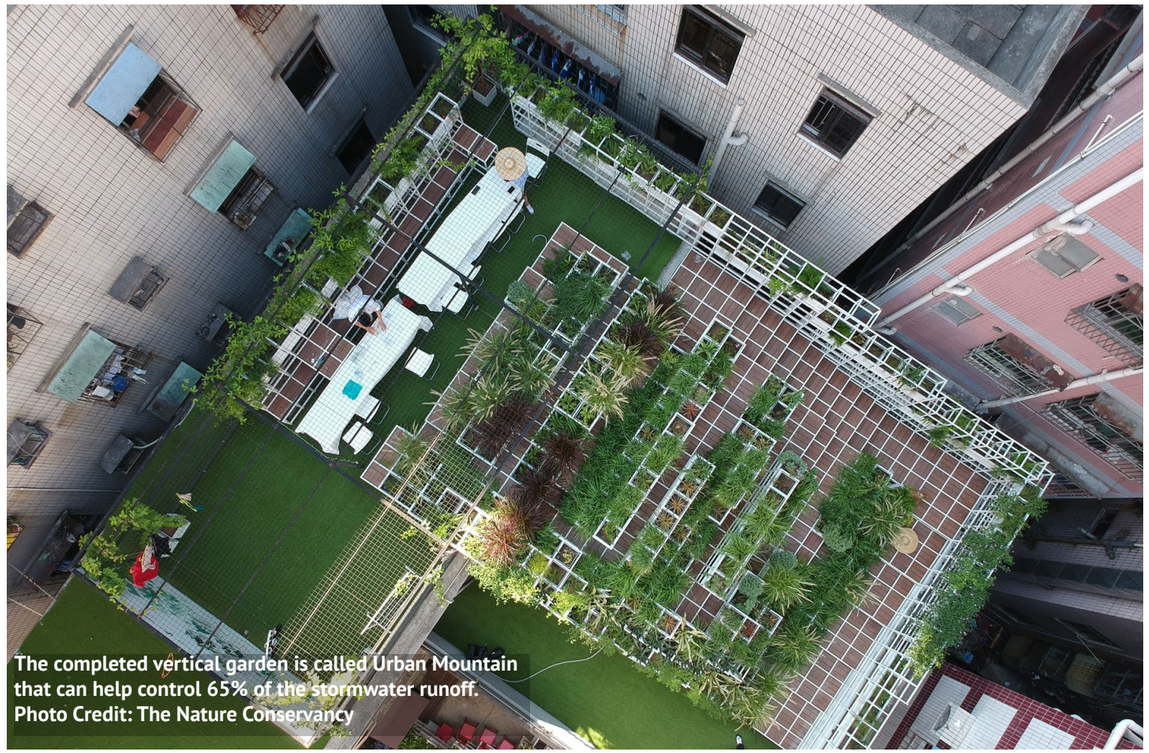


The completed vertical garden is called Urban Mountain that can help control 65% of the stormwater runoff.
Photo Credit: The Nature Conservancy

The Green Cloud Project: Finding Green Space in an Urban Village (Shenzhen, China)

By Vivin Qiang & Xin "Fish" Yu

Shenzhen, a coastal city located in Southern China, is a classic case of rapid urbanization. In just 40 years, Shenzhen went from a fishing village to a megapolis of 20 million inhabitants. Within the city, many original villages remain, but rapid development has turned the farms surrounding them into high rise buildings, and in turn, these villages have become "urban."

Today, there are over 1000 urban villages in Shenzhen. They are one of the few places left within the city where one can find affordable housing, attracting migrant workers from other regions of China who have come to Shenzhen for work. Gangxia Village is one of them; situated in the central business district of Shenzhen, surrounded by high-end hotels and skyscrapers. However, due to high demand for housing, concrete residential buildings take up most of the space within the urban village, leaving little room for vegetation and green public spaces, such as parks or gardens. As a result, whenever it rains, urban villages like Gangxia are especially vulnerable to floods, as the abundance of impermeable surfaces is unable to absorb rainwater.

The Gangxia 1980 green roof, a pilot of the Green Cloud project, was launched by The Nature Conservancy (TNC) in collaboration with key partners, including: Zhubo-AAO; Glocal Estate Management; and UPDIS (Urban Planning & Design Institute of Shenzhen). Our aim was to showcase a model to improve the urban village's stormwater management system and its living environment. Due to the lack of available space on the ground, we decided to make use of the largely unused rooftop space on a residential building. Through a simple, replicable roof renovation that involves planting vegetation, the concrete surface of the pilot building was transformed into a "sponge-like" body that is capable of absorbing and preserving rainwater, while expanding greenery in an area deprived of nature.

The three-dimensional light steel structure carries over 410 plant containers filled with indigenous plants from Shenzhen's coastal region, recreating the original natural habitat of the city and enhancing biodiversity in the area. The rooftop garden is also a prominent example of the "Sponge City" initiative, a Chinese national policy framework that focuses on sustainable urban stormwater management. In 2016, Shenzhen became a pilot city of the "Sponge City" initiative and has been working to help urban communities in Shenzhen become more resilient to urban flooding with green infrastructure. TNC has been assisting the local government in restoring the city's natural stormwater management system by increasing the amount of green spaces within the city. The availability of empty rooftops is a largely untapped resource, which makes it a perfect location to install green infrastructure.

The construction of the rooftop garden includes the installation of a rainwater collection barrel. As a result, Gangxia 1980 now retains over 65% of the rainfall that reaches its roofs, creating a stormwater management system that can absorb, purify, store and reuse rainwater. Green roofs also help regulate room temperature within the building, reduce the urban heat island effect, improve air quality, and lower greenhouse gas emissions.

However, the Green Cloud project was not without its challenges. Due to the unique design of the Gangxia 1980 green roof, some residents of Gangxia village thought illegal construction was going on and filed complaints to the district law enforcement, resulting in the project being forced to stop during the beginning stages of construction. To resolve the problem, TNC made various visits along with Glocal, the property manager, to local community centers, government authorities and law enforcement. The team explained the project and its objectives in further detail, invited them to visit the site and shared details of the design plan with them. After several meetings, the project finally received oral approval from local authorities and the community, allowing construction to recommence.

Volunteers help plant more than 410 flowerpots to store and draw out water.
Photo Credit: The Nature Conservancy

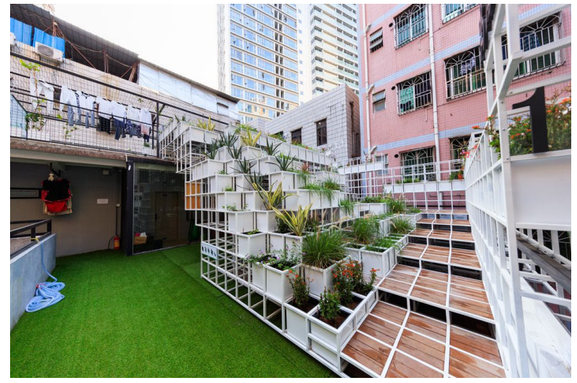
Community engagement was one of the key elements to the success of the Green Cloud project. Without proper communication and a process of trust-building with the local community, even well-intentioned projects can be misunderstood or perceived poorly by the neighborhood. However, after the community learned about the purpose of the rooftop garden, their attitudes drastically changed. These days, neighbors are friendly and engage with the project by asking questions about the plants in the garden. Due to the close proximity of the buildings, some residents can now observe the little green hill on the rooftop right from their apartment windows— a sight seldomly available in an urban village.

The presence of the rooftop garden not only yields environmental benefits, it has also sparked positive social impact for the community, providing a space for social, recreational and educational activities for people of all ages. Since the garden's official opening, TNC has led two summer nature education programs for local children, where students from the village have had the opportunity to be outdoors and learn about subjects like the ecosystem and biodiversity. The program also uses the green roof for children to practice and observe nature in action as they try out their gardening skills.

By creating social spaces such as the Green Cloud project within the urban village, the project team also hoped to help build relationships among neighbors by bringing them closer together and fostering a sense of community. With this in mind, we had an innovative idea – to host a live music concert on the green rooftop. The majority of the residents in the urban village community are from the working class and may not have the means or time to attend a classical concert. Therefore, we were inspired to bring a piece of cultural life to them. This idea was supported by the Sinolink Education Center in Shenzhen, whose students volunteered to organize a performance. One summer evening, using the rooftop in an urban village as their stage, a group of young musicians held a classical music concert. The surrounding residents came to watch and listen from their windows, enjoying an unconventional concert.

The rooftop garden inside Gangxia village is just the beginning of the Green Cloud project. TNC hopes to expand

A classical music concert was held on Urban Mountain for the community. Photo Credit: The Nature Conservancy



The project in progress and after completion. Photo Credit: The Nature Conservancy

the presence of green rooftops across major urban villages in Shenzhen, under the premise of ensuring safety and improving both the environment and the quality of life of residents living in these dense settings. It is estimated that urban villages provide affordable housing for approximately 50% of Shenzhen's residents, most of whom are migrant workers and young graduates.

A highly transient population poses a major challenge to the installment of green roofs in these communities. Nearly all inhabitants of urban villages rent, and their lack of ownership gives them little power to negotiate any type of building renovation. The temporary nature of their stay also discourages residents from investing too much into their living space. As for the landlords, many do not live in urban villages themselves, so they pay little attention to the living conditions inside the villages, especially when demand for affordable housing remains high. Therefore, the need to create more green spaces is not perceived as a priority.

Despite these challenges, TNC continues to work towards building healthy cities through the integration of green infrastructure. By making room for nature, we can create a new type of city – one where urban residents can enjoy the benefits of nature while mitigating the effects of climate change. Here in Shenzhen, we are trying to redefine what urban life represents, starting from the "top."

Vivin Qiang is a project consultant on the TNC Shenzhen Urban Conservation team, focusing on sustainable impacts on urban development.

Xin "Fish" Yu is TNC Shenzhen Conservation Director, managing urban conservation and public engagement projects.

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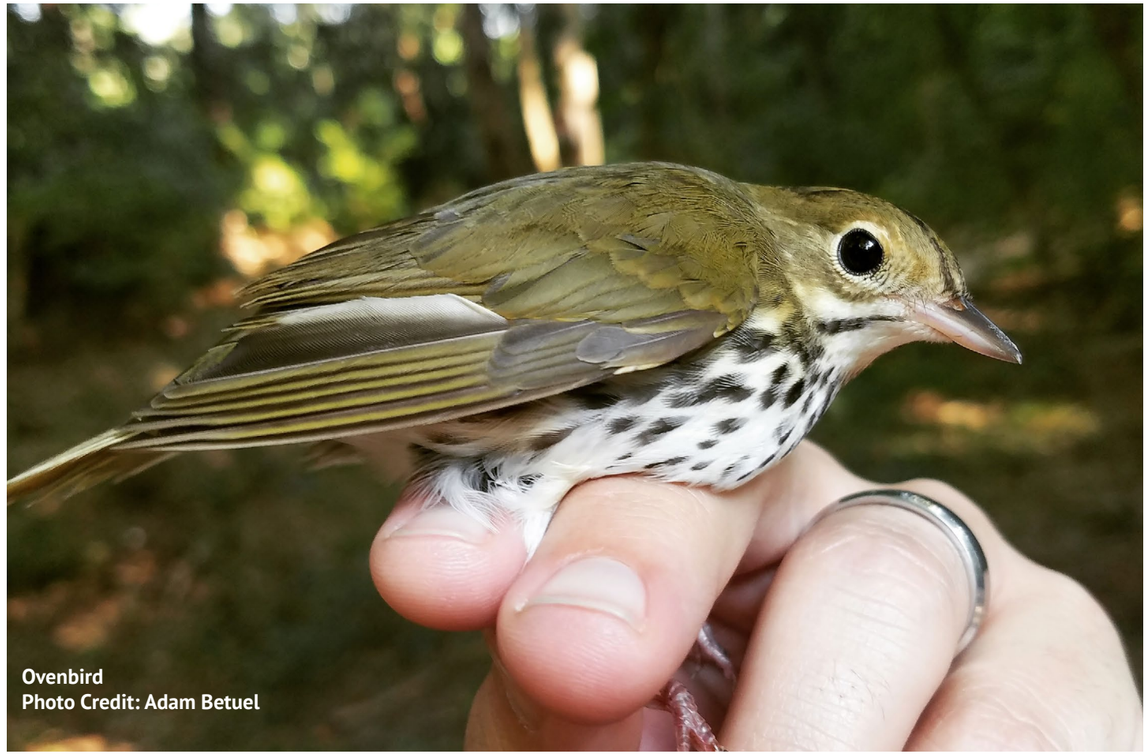

Ovenbird
Photo Credit: Adam Betuel

What Does it Mean to be Bird-Friendly?

By Adam Betuel

The best lens to use to be the most eco-friendly is a pair of binoculars. Making your community bird-friendly is also pollinator-friendly, energy-efficient, chemical-free, and climate-forward. These are just some of the environmental movements and hashtags that are covered by making choices with birds in mind. Most people have a story about birds and are curious about them, so it's easy to start a conversation. Birds don't have a party, nor do they have a voice — this is neutral ground where making decisions that are bird-friendly is a good thing for everyone involved.

When we think of how our cities can be bird-friendly and how it is essential to build places where both birds and people thrive, we must start with habitat and healthy greenspaces. As we continue to grow and develop, it is often far too easy to weaken the places that our birds and other wildlife rely upon. Habitat protection, creation, and restoration are all steps that a bird-friendly city must take.

Here in Atlanta, we have an amazing and rapidly increasing network of trails. These human-focused passageways can also serve as corridors for wildlife if they are thoughtfully done. The tree canopy that Atlanta is so proud of not only cools our city, sequesters carbon, and improves our outdoor experience, but also provides shelter for nesting Great-Crested Flycatchers and a refueling station for migratory Magnolia Warblers. A strong tree ordinance and valuing our urban greenery is vital for a bird-friendly city. Just as important as habitat protection and creation is increasing the value of the available habitat. Unfortunately, too many of our yards, parks, and wild spaces are overrun with exotic and invasive plants such as Chinese Privet and English Ivy. These unwanted guests weaken our ecosystems by simplifying the structure and diversity of our forests, choking out native vegetation, failing to produce the needed amounts of insects our birds rely upon, and in many other ways. Habitat restoration, valuing native plants, and education centered on these topics are ways in which we can create and support the habitats both birds and humans need.

While it is vital to provide places where birds can flourish, a bird-friendly city must also reduce the threats birds face in an urban setting. Birds have shown us that they rely on wild places within cities but also that the built environment has dangers. Up to one billion birds perish annually in the United States from colliding with buildings. Reflective glass and transparent barriers are threats that birds are not equipped to handle, often leading to death. Luckily, products exist that allow us to have buildings that allow for great vistas and enjoyable live/work spaces without the devastating thuds of bird-building collisions.

Related to this issue of birds and buildings is lighting. Many of our winged brethren undertake an amazing journey each spring and fall between their wintering and breeding locations. As these birds migrate, many fly at night and use the stars and setting sun for guidance. Growing light pollution has been shown to disorient birds, causing them to be pulled into illuminated areas and stop in places they typically would not. Once in these constructed areas, birds are more likely to hit a window, collide with a vehicle, or encounter the many other threats that exist in these spaces. The responsible usage of lighting, buildings constructed with bird-friendly design features, green roofs, and urban planning with ecosystems as a focus are all vital for our cities to become truly welcoming and supportive of wildlife.

Photo Credit: Atlanta Audubon Society

For a city to be bird-friendly, it must have strong legislation and ordinances regarding tree removal and replanting, water conservation, building design, and building materials, among other things. We all need to realize the value that birds bring to the environment and our lives as humans and create infrastructure that supports them.

However, a bird-friendly city also needs bird-friendly residents. You might not have property that you can fill with native plants but you can purchase shade-grown coffee. In addition to putting your garage light on a timer, you can make sure your cat is fully indoors and not contributing to the staggering number of birds killed by our felines each year (approximately 2.4 billion). Don't fog your yard with pesticides but do purchase food that is local and reduces human impacts on our environment. These are all steps that we need to consider so that collectively we can make life better for our birds.

Birds disperse seeds, pollinate, inspire us, massively contribute to our economy, and connect us to the natural world maybe more than any other type of wildlife. We need birds for us as a society to excel and they need us to preserve habitat and lessen or eliminate our modern threats. As our world, and Atlanta specifically, urbanizes and braces for a growing population, we must support our ecosystems.

Bird-friendly cities can be constructed and fortunately, more and more steps are being taken every day towards this goal. Our buildings do not need to be ugly for them to be bird safe and we don't need to forgo our comforts to coexist with our feathered friends. Take the steps you can and support the people and organizations that understand the value of our urban habitat. Now go outside and enjoy some birds!

Adam Betuel is the Director of Conservation for the Atlanta Audubon Society

Resources:

Adult Workshops. https://www.atlantaaudubon.org/workshops.html

Master Birder Program. https://www.atlantaaudubon.org/master-birder-program.html

Field Trip Calendar (Free!). https://www.atlantaaudubon.org/field-trips.html

Why birds matter. https://www.atlantaaudubon.org/why-birds-matter.html

Visitor's Center at Sawnee Mountain Preserve
Photo Credit: Atlanta Audubon Society

Left & Right: Local Festival, 2016
Photo Credit: City of Raleigh

Dorothea Dix Park: A Park with a City in It

By Caroline Lindquist

Sitting less than a mile from the main street of downtown Raleigh, North Carolina is a 308-acre piece of land that is undergoing a transformation into America's next great urban park. The rare opportunity to have an expansive green space on land in the heart of one of the nation's fastest growing cities has led some planners and landscape architects to call the creation of Dorothea Dix Park the most important and exciting urban park project in America today.

How was this land saved for so long from private development? For 150 years, the land was the site of the State Mental Health Hospital, named Dorothea Dix Hospital. For the 150 years prior to the hospital, the land was a plantation. In the early 2000s, the State of North Carolina determined they would close the hospital, as trends in mental health services had shifted away from centralized care. Multiple community groups and local business leaders urged the city to seize this opportunity and buy the land for public space. In 2015, the City of Raleigh, with the support of the community, purchased the 308 acres from the State for $52 million with the intent of turning the land into a destination park.

Dorothea Dix Mental Health Hospital functioned as almost a city within a city. It had its own working farm, power plant, water source, woodworking shop, a playground and mini neighborhoods where doctors, nurses, and their families lived. At its maximum, the hospital property stretched westward 2,000 acres. The self-sufficiency of the property meant that the land and those who occupied it were in many ways isolated from the rest of the city. The stigma that surrounded the mental health hospital only furthered that perception. Neighbors of the hospital property include North Carolina's Central Prison, the Governor Morehead School for the Blind, and formerly included an orphanage, a co-location of marginalized people of society in that time. Now, the city is working to transform the site into a welcoming central gathering space for all.

Dix Park planners knew that the first steps of public engagement needed to focus on informing the community about the site's history and opening up this little-known space to all of Raleigh. To capture the true potential of the project, the city needed to foster community ownership of the new park land. One strategy that planners used was activating the site with creative park programming. In 2016, at the one-year anniversary of the property purchase, the city in partnership with the newly-formed Dorothea Dix Park Conservancy, held an enormous festival with performances by local musicians, food trucks, a Ferris wheel, art installations, and family activities on what was once a pasture for the hospital

farm's cows. Although that July day was the hottest day of the summer, the festival drew 28,000 visitors. There was clearly a public yearning for a communal green space. Park planning staff began offering hundreds of public walking history tours to further introduce the community to the space. They also visited countless community groups to give presentations on the park's past, present, and future.

In 2017, the City of Raleigh hired Michael Van Valkenburgh Associates to create a master plan for Dorothea Dix Park with a bold vision. During the two-year master planning process, city staff began what would become the city's largest public engagement outreach process in Raleigh's history. Dix Park planners offered experience-based engagement opportunities at the park to supplement public meetings and draw a more diverse crowd. At park events, planners gathered ideas from the public and listened to what people wanted the park to become.

In February 2019, the Dorothea Dix Park Master Plan, shaped by feedback from over 65,000 participants, was completed and unanimously adopted by Raleigh City Council. Three Park Principles

Dreamville Festival, 2019
Photo Credit: City of Raleigh

Sunflower Fields at Dorothea Dix Park in Raleigh
Photo Credit: Visit Raleigh

Sunrise Yoga on the Summer Solstice
Photo Credit: Dorthea Dix Park

of the master plan provide a continued guide for transforming this park with a complex past into the cultural heart of the city: (1) Open Up and Connect; (2) Build from What is There; (3) Offer Something for Everyone. While the full vision set forth by the master plan will not be completed for decades, the principles that guide it can be and are being implemented in the park today.

The Dix Park Team, comprised of city park planners, park maintenance staff, and the Dix Park Conservancy, has begun "Open[ing] Up and Connect[ing]" the site by tearing down a ten-foot tall fence that separated one edge of the property from a nearby neighborhood. The team has begun "Build[ing] from What is There" by using five acres of the unused capped landfill that was covered in weeds to plant thousands of sunflowers for park-goers to enjoy. Lastly, the team has hosted a wide range of events to activate the green space and "Offer Something for Everyone"— from sunrise yoga on the summer solstice to a 40,000-person hip-hop music festival. Overall, these continued efforts are shaping this separated space for some to a place of belonging for all.

Caroline Lindquist is the Planning Specialist for Dorothea Dix Park in the City of Raleigh's Department of Parks Recreation and Cultural Resources

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Hoyle, Amanda. (Jul. 24, 2015). State finalizes sale of 307-acre Dorothea Dix property for new Raleigh destination park. *Triangle Business Journal*. https://www.bizjournals.com/triangle/blog/real-estate/2015/07/dorothea-dix-park-sale-finalized-raleigh-nc.html

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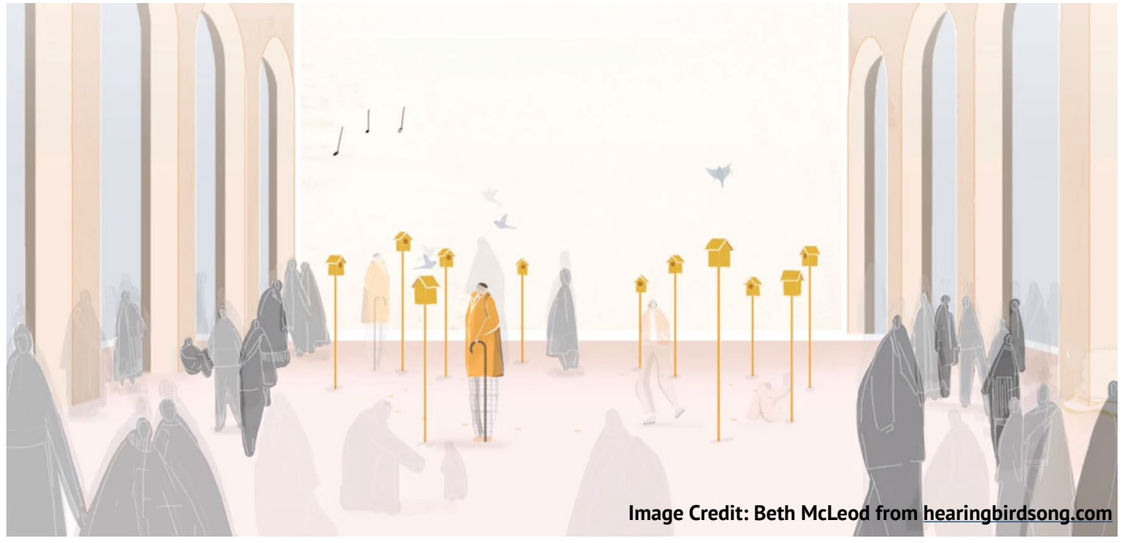


Image Credit: Beth McLeod from hearingbirdsong.com

Hearing Birdsong

By Tim Beatley

British architect Tom Woods, of the firm Woods Kennedy, found himself one of the few people in a co-designing workshop (referred to as the "sandpit") around hearing loss without a direct connection as a patient or audiology professional. He ended up successfully pitching an idea to the group that has now been funded and is beginning to take hold.

The essential idea was to utilize birdsong—something universally enjoyed—as a creative way to discern hearing loss. In the UK, as elsewhere, many who have experienced hearing loss have never been tested. And there is little wonder, given the typical process of going to an audiologist, putting on large headphones, fearful of what the results are likely to show. Woods thought about this in the case of his own Dad, and the "very negative message" such a process sends. What if, on the other hand, one's hearing loss might be more naturally discovered and diagnosed by the ability (or inability) to hear birdsong? Instead of an electronic tone, the use of birdsong, says Woods in an August 2019 interview, should help "to humanize this process." The emphasis can be more positive and optimistic—keeping or restoring one's hearing in order to enjoy the birdsong and other sounds we want to hear, what Woods calls an "aspirational message." That was the essential insight that lead to the Hearing Birdsong project.

And the need is considerable. Woods tells me that of the estimated 12 million people in the UK with hearing loss, the vast majority (9 million) are undiagnosed. Hearing loss is often slow to be recognized. "That point of self-diagnosis is coming much later," Woods says.

The songs of three British birds (Wren, Song Thrush, and Wood Pigeon) are used. They are projected from bird boxes, each "calibrated at a different frequency band" to help detect hearing loss. An installation consists of an array of six bird boxes of different colors, each with its own receiver and speaker, all coordinated through a laptop computer. The current version allows adjustments for background noise to create a sense of dynamic movement of birds in a room. Further work on the system (version 3.0) will allow the birdsong to be even more customizable and dynamic. More work will also be done to improve the diagnostic side: specifically, to create clear thresholds that, once crossed, allow for hearing loss detection.

While a softer approach to detecting hearing loss, the Hearing Birdsong installations are also themselves a form of art, and they have the potential to deliver beautiful and uplifting (and therapeutic) sounds to the interior spaces of buildings. The installation can be small and compact, something that could be taken to a school or set up in the lobby of an art gallery or a doctor's office.

So far, two installations have taken place with another three expected by the end of 2019. Woods and his team are working on further developing the system, and refining the software, and he can imagine even larger installations (perhaps even a room of 100 boxes or more).

He and his team plan to take the boxes to schools and he hopes at some point the iconic symbol of the bird box will become recognizable as a place where one might be able to discreetly detect hearing loss.

The latest version of the box being developed, in partnership with the Dyson School of Design Engineering at Imperial College, will feature an even more sophisticated platform for diagnosis, including sound software that will, for instance, better adjust for the background sound conditions of the various places the boxes might be installed.

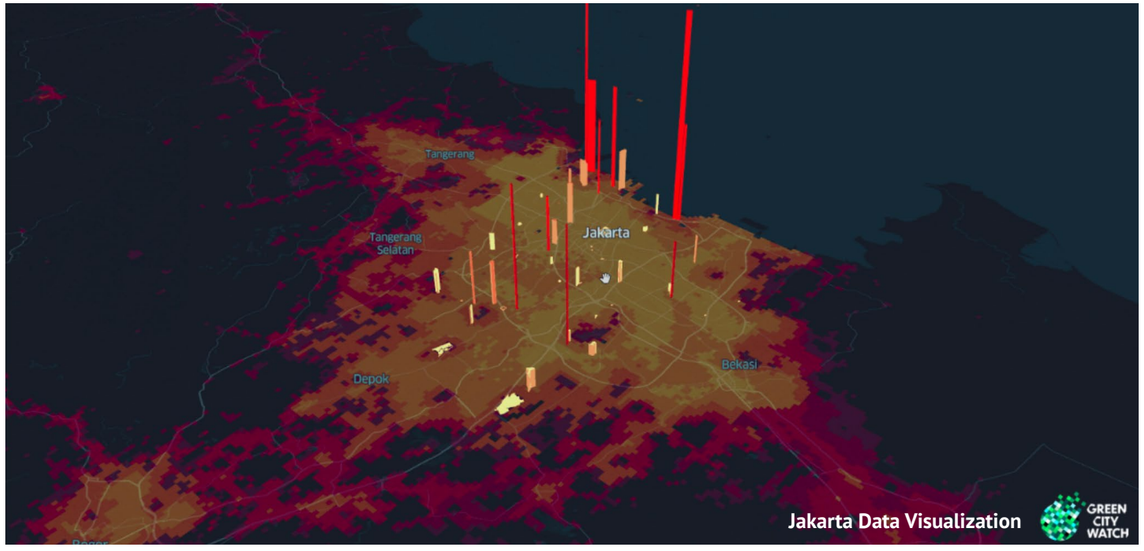
Woods describes the artistic and other humanly enjoyed benefits of birdsong as a kind of "parallel ambition." In addition to cleverly detecting hearing loss, there is little question that bringing such beautiful natural songs into the indoor spaces where we spend most of our time would be a profoundly beneficial outcome. Woods thinks of installations at The Turbine Hall at the Tate Gallery in London and wonders whether Hearing Birdsong could reach a similar audience to similar effect, in many cases visitors simply sitting down and letting the art wash over them. Wouldn't it be wonderful, he opines, if visitors are "tempted to just sit and enjoy half an hour of it, even if there is no diagnostic element."

Resources:

Hearing Birdsong. https://www.hearingbirdsong.com.

Wren
Photo Credit: Ryk Naves

Song Thrush
Photo Credit: Taco Meeuwsen



You Can't Manage What You Can't Measure: How geoAI Transforms Indonesia's Human-Nature Conflict Zones

By Nadinè Galle

What comes to mind when you hear "conflict zone"? A place where factions are waging war against each other? An area marked by extreme violence? A region at sea in which ships are prone to being attacked? In 2017, Penn researchers launched "The Atlas for the End of the World," which outlined a different kind of "conflict zone": zones of imminent conflict between urban growth and biodiversity.

Specifically, the Atlas showed the difference between the United Nations Convention on Biological Diversity (CBD) targets for achieving 17% (global terrestrial) protected area by 2020 and what is actually protected today in the 398 eco-regions that comprise the world's 36 biodiversity hotspots. The world's scientific and conservation communities have called attention to these so-called "hotspots" as the most threatened biological places on Earth.

Jakarta: "Hotspot city"

While several factors have led to the demise of global biodiversity, urbanization and its demand for intensive agriculture are primarily to blame (WWF Living Planet Report, 2018). Mapping of these areas of human-nature conflicts has led to the definition of "hotspot cities": cities with 300,000 or more citizens who are in direct conflict with biologically-rich regions. In the Atlas, Richard Weller and his colleagues outlined 422 of these "hotspot cities" that fall within the world's 36 recognized biodiversity hotspots. The research also took a closer look at 33 of the world's biggest and fastest-growing cities situated in these hotspots, including our latest project: Jakarta.

Jakarta has most recently made headlines for being the fastest-sinking city in the world. Heri Andreas, who has studied Jakarta's land subsidence for the past 20 years at the Bandung Institute of Technology, found 95% of North Jakarta will be submerged by 2050 (Lin & Hidayat, 2018).

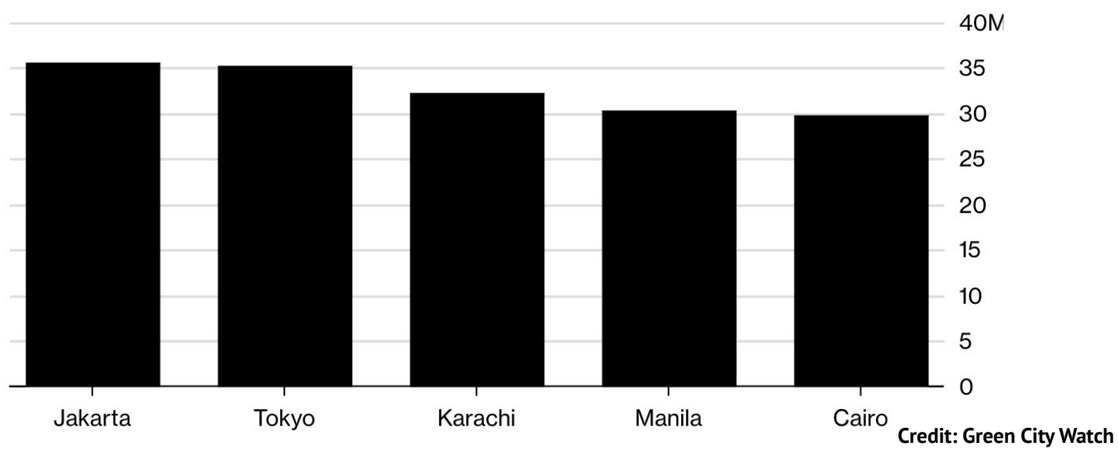
While Indonesia's president is considering moving the nation's capital, there are other issues to contend with. For one, the city is also one of the world's fastest growing. Currently, some 28 million people call the Greater Jakarta Metro Area home, and it's set to surpass Tokyo as the world's largest city with 35.6 million people by 2030. Without reliable public transport, the city is also home to some of the world's worst traffic jams, and coupled with smoke from the (at times, illegal) burning of forests and agricultural land, the city has dangerous levels of particulate matter.

Similar trends can be seen in other fast-growing Indonesian cities where infrastructure has failed to keep pace with population growth. Despite the government's best efforts to curb severe air pollution by phasing out leaded gasoline, inspecting car emissions, and switching from diesel to compressed natural gas for its power plants, these efforts are no match for Indonesia's booming economy. In the past decade, millions more people were able to afford cars, motorcycles, mopeds, and scooters, which led to increased particulate matter and decreased air quality.

How to objectively monitor the "quality" of urban green?

Humans, like their ancestors, need green space to thrive. And with increasing urbanization in places like Jakarta, already scarce green spaces are stretched even further. We rely on these parks, gardens, and urban forests to promote physical and mental health, cool the air, and filter out fine particulate matter—one of the most dangerous forms of air pollution. To continue harnessing these benefits as cities grow, green space must also grow in parallel. However, it is not sufficient to merely grow the quantity of urban green space without consideration of its quality.

It is important to consider that not all green space is created equal. Variations in ecological "quality" (number of species, integrity of ecological processes) may very well influence the link between access to green space and benefits to human health and well-being (Wood et al., 2018). Therefore, it is crucial to map, understand, and monitor these changes, whether positive or negative.



Green City Watch is an Amsterdam-based start-up that taps into high-resolution satellite imagery and the latest advancements in a new field called "geospatial artificial intelligence" (geoAI) to map the quality of urban green space. Previously, satellite imagery and GIS had mainly been used to map the quantity of green space, or perform land use/land cover change analyses. But Green City Watch takes this analysis a step further.

Our technology combines ecological knowledge, new data sources (high-resolution satellite data) and innovative technologies (machine learning & AI) to measure the quality of urban nature. We also measure where the most impact can be achieved when constructing new—and improving old—green space. Our technology is able to recognize and measure the

biodiversity and quality of urban nature. Frequent analyses make it possible for us to increasingly recognize and interpret nature and biodiversity through our models. We are also able to measure the health and composition of trees and plants from the satellite data. We work closely with urban ecologists, biodiversity experts, and universities to improve our analyses and ground-truth them in the real world.

Our model has endless applications for municipalities, green managers, and ecologists to conduct their park-inspections in a faster and more targeted way. This not only increases the efficiency and quality of inspections, but also enables the manager to take more flexible and focused action. This leads to higher quality green space and optimal protection of biodiversity. The technology runs on big (geo)data, which we believe is the next frontier in ecosystem management.

The in-house developed Green City Watch Index scores green spaces on select ecological, social, and economic parameters, to holistically measure the quality of these spaces. The Index considers water bodies, riparian vegetation zones, a park's composition, amenities and facilities, and many other variables.

Photo and image credits: Green City Watch

Proof of concept across Indonesia's 26 most-populated cities

After winning Maxar's GBDX for Sustainability Challenge, Green City Watch began collaborating with the World Bank's City Planning Labs (CPL) team, who has a mandate to accelerate evidence-driven urban planning in Indonesia.

To establish a proof of concept, Green City Watch analyzed 26 of Indonesia's most populated cities, including Jakarta, to measure both the quantity and quality of green space. Within three months, the initial proof of concept managed to successfully identify 531 parks within the 26 cities. Taken all together, this represents 1,817 hectares of green space in Indonesia. To put that into perspective, the City of Amsterdam (The Netherlands) has about 1,476 hectares of green space in total – almost as much as Indonesia's major cities combined.

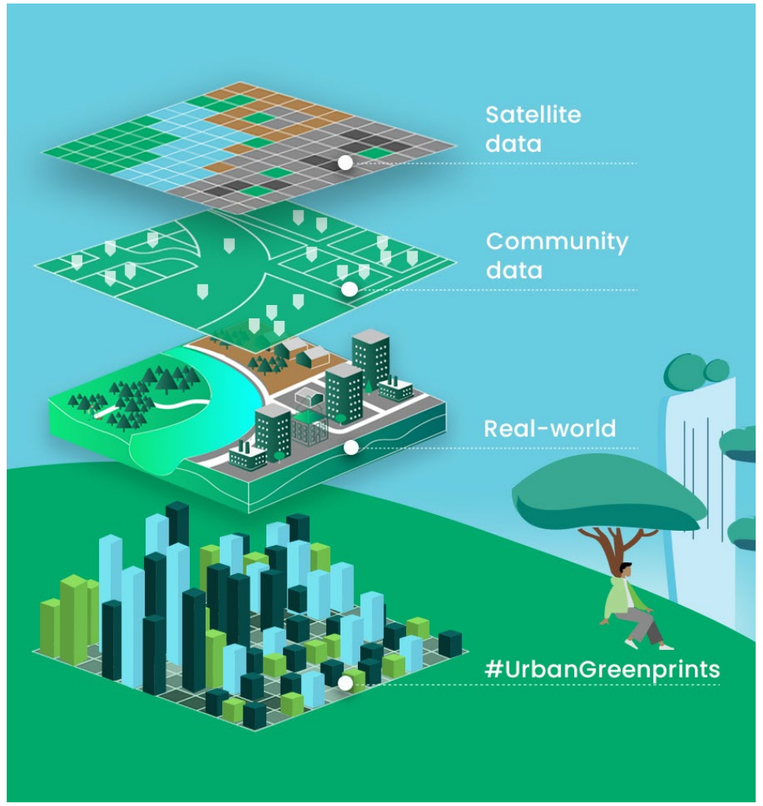
In addition to mapping the quantity of green space, in terms of the geographical extent and locations of the green space, our proof of concept also measured the quality of green space by measuring parks' infiltration capacity (the maximum rate at which soils can absorb rainfall), ratio of permeable versus impermeable land (where water can percolate into the soil to filter out pollutants and recharge the water table versus where it is blocked by concrete, buildings or other materials), the number of trees within the parks, and the availability of amenities and recreational facilities. The latter leveraged crowdsourced data from the OpenStreetMap (OSM) initiative.

For example, in Jakarta, Green City Watch calculated these statistics using our algorithms:

- Parks cover 825 hectares
- 43 parks over 2 hectares in size
- Over 300 hectares of trees, 90 hectares of grass and 20 hectares of water within parks
- 225 hectares of high-quality green space, according to the Green City Watch index
- Monas Park, one of the biggest city parks in Asia, has 8 public toilets, 6 sport pitches and 5 historic monuments

Now, with the added support of winning the World Bank's Disruptive Technologies for Development (DT4D) Challenge Award, Green City Watch will collaborate with CPL again to develop a "Green and Blue Footprint Tool" that builds upon the project to include water bodies and scales it to realize real-world impact.

If we're serious about imagining, designing, and building biophilic cities, we must begin to measure the nature within them in terms of both quantity and quality. Monitoring the urban environment with geoAI can reduce the observer bias that can typically plague ground-based measurements. But, perhaps most importantly, open-source geoAI, like Green City Watch aims to develop, can make monitoring cheaper and more accessible, by supplementing—or even replacing—in-situ measurements. Ultimately, enhanced assessments of existing conditions will help optimize the scarce resources within planning departments to ensure better green space for today's—and tomorrow's—rapidly urbanizing populations.



Nadinė Galle is Co-Founder and CEO of Green City Watch, PhD Candidate, Ecological Engineering, University College Dublin and Fulbright Scholar, MIT, Senseable City Lab

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Birds of Paradise
Photo Credit: Birds.id

Protecting Indonesian Birds

Interview with Marison Guciano, FLIGHT Founder

FLIGHT protects Indonesia's birds and raises awareness of birds in the country. Before forming FLIGHT, its Founder Marison Guciano spent two years investigating Indonesia's extensive illegal bird trade. Here, Biophilic Cities explores, through a Q&A with Marison Guciano, FLIGHT's strategy, successes, and challenges that lay ahead.

Biophilic Cities (BC): Can you explain how you became interested in bird conservation and how and why you formed the non-profit FLIGHT?

Marison Guciano (MG): Previously, I was involved in general issues regarding animal welfare and wildlife trade. I also campaigned to close the wildlife markets. While focusing on the issue of wildlife trade, I saw very few organizations targeting the illegal bird trade, especially that in songbirds. In fact, there is currently a crisis here. The trade in songbirds is a significant threat to the continued survival of wild birds in Southeast Asia. Indonesia is the epicenter for this trade. In February 2018, FLIGHT: Protecting Indonesia's Birds was formed in response to this urgent conservation crisis. It is dedicated to stopping the illegal trade in birds.

BC: What are the main goals of FLIGHT?

MG: We want to stop the trade in wild birds, both legal and illegal. We believe that birds belong in the wild, not in cages. Wild birds that are traded and kept as pets do not have any quality of life. They are locked in small and barren cages just so that we can listen to them sing.

I realized that efforts to stop the bird trade will be a long battle. It will not be easy. Especially in Indonesia, where keeping birds as pets has become a cultural practice. But, we are optimistic that we can bring change.

BC: Can you describe how serious a threat illegal trafficking in birds is in Indonesia and other countries?

MG: In Indonesia, the illegal trafficking in birds is a huge threat. For Javanese people, the largest tribe in Indonesia, raising birds as pets is a culture. Therefore, the demand for birds to supply markets in Java is very large. The results of our investigation state that at least 10,000 birds per week were sent illegally from Sumatra to Java.

FLIGHT was formed as a direct response to the massive scale of songbird trade in Indonesia, most of which involves the trapping of wild birds to supply the demand. This is driving many species to decline and even causing local extinction in the wild.

BC: What motivates you to work on behalf of birds?

MG: Challenge. I often visit the bird markets. I saw them confined in small and barren cages. I feel that birds in the cages are depressed. They have wings, but they can't fly. Sadly, almost everyone who sees this cruelty thinks it is normal. I promised myself that I must bring change for these birds.

BC: What successes have you had so far?

MG: We have saved more than 10,000 birds from illegal trade and returned them to the wild.

BC: Are you finding public support for the work you are doing? And is this support growing?

MG: Yes, we are beginning to experience public support. And this is growing. Some members of the public have provided information, support and even funds for us.

BC: Can you talk about the importance birdlife in cities and villages in Indonesia?

MG: Yes. We also provide educational programs for the younger generation in schools. We are donating books related to bird preservation and their habitat. We want our younger generation to grow up with strong awareness of the preservation of birds.
We not only emphasize the importance of birds as seed spreaders but also as guardians of balance in the ecosystem. We also remind students that birds have the right to fly freely where they like. As studies show, birds also have emotions, like us. We must not remove the rights of birds by locking them up as pets in small, barren cages.

BC: What challenges have you had faced in your work?


Song birds rescued from illegal trade released by FLIGHT
Photo Credit: FLIGHT

MG: The resources of FLIGHT are very limited. Most of us are young people and work voluntarily. We are dealing with an industry that has strong connections with money, corrupt officers and other resources. We encounter many threats because we are perceived as interfering with these business interests.

BC: Are you optimistic that you can stop or significantly curtail the illegal trafficking of birds?

MG: Yes, we are optimistic. For now, at least, we have managed to disrupt the smuggling of birds from Sumatra to Java as a result of seizures carried out by the quarantine authorities in the Bakaheuni Port (on the island of Sumatra) and Merak Port (on the island of Java), two ports that connect Sumatra and Java. We provide vital support to the quarantine authorities, including information from the results of our investigations.

BC: Keep up the great work that you do in Indonesia, and we look forward to partnering in the future!

Edited by Sean Geygan
Editorial Note: In the past eighteen months, FLIGHT has rescued more than 20,000 birds. Since the interview, Lampung Quarantine authorities, assisted by FLIGHT, stopped the smuggling of hundreds of birds from West Sumatera to Jakarta at Bakaheuni Port on October 1, 2019. All of those birds have been released into the wild.

Resources

FLIGHT. http://flightprotectingbirds.org.

Photo Credit: bookfinch

De-Regulating Wildness

By Julia Triman

I came to the University of Virginia to work with Professor Tim Beatley on his Biophilic Cities Project. I was so inspired by his research, his writing, his message of finding ways to connect people and nature in cities. What I have learned during my time at UVa has surpassed even what I might have hoped – and surprised me in unexpected ways. I recently completed my dissertation under Tim's direction, "Regulating Wildness: Planning Discourses of Weeds and Wildlife in Washington, D.C.," (available through the UVa Library catalog) and the only thing I am sure of about nature now is that it is impossible to simply define. Before I started my work with Biophilic Cities, I thought I knew what "nature" was: I love hiking, being outdoors, plants, and animals. Nature was beautiful, something apart from human-constructed "things." But after several years spent studying urban and environmental planning and landscape architecture, I became entangled in questions about the nature of nature, specifically through the lens of urban weeds: if they are not "nature," what are they? What is "nature": where does it start, where does it end? Is it even a useful term at all? How are humans related to this idea of "nature" – are they truly something separate or is it one big tangled web?

Background

Often, the "nature" people think about and care about in cities is curated and tended specifically by humans in the image of what humans want to see and enjoy. There are other nonhuman participants in city life – plants and animals – that exist within and beyond human attempts to control and enforce order and regularity in cities. My research explores the tensions between human attempts to define, delineate, and control the meaning and material of "nature" on the ground in cities, and the flourishing plant and animal life that persists despite and because of human activity.

Natures

To begin my dissertation, I examined the ways planning scholars in five contemporary planning journals used the word "nature." In approximately twenty years of publication, the five journals - *Journal of the American Planning Association, Urban Studies, Environment and Planning A, Journal of Urban Affairs and Journal of Planning Education and Research* - had surprisingly few references to nature. Interestingly, significantly more book reviews than original articles in the planning journals use the term "nature." This might suggest either that those writing about "nature" as it pertains to planning may seek to publish these types of works outside of academic journals or that the journal missions, publication tendencies, and/or submission guidelines do not allow for these types of inquiry. I used NVivo Pro for Windows to code and analyze each reference to "nature" in articles discussing urban nature specifically, and after several rounds of coding determined six meta-themes (see Diagram 1). These meta-themes collectively organize into two distinct theoretical orientations: those viewing nature as a thing that benefits or harms humans and those viewing nature as plural, complex, intertwined and co-produced by humans.

While a variety of urban natures are evident in recent planning scholarship, the voices are few and the volume of discussion is quite low. This translates into very little planning-led discourse about urban nature in contemporary academic planning journals, which is problematic given the ubiquity and importance of nature-related discussion and action about natures, both theoretically and materially. Planners and planning scholars are uniquely positioned to influence work happening on the ground in cities, and therefore deeper engagement with a variety of natures has the potential to deepen and strengthen urban and environmental planning practice.

Weeds

My "Regulating Weeds" chapter (titled "Weeding Washington" in a forthcoming article in the *Journal of Planning History*), examines some of these themes through a case study of planning and regulatory actions in Washington, D.C. at the turn of the twentieth century. Discourses fomented in the 1890s about weeds being a menace to public health, public safety, and aesthetic appeal of the city. Residents throughout the city, presumably many of them wealthy property owners, as well as journalists and lawmakers, collectively constructed political and popular discourse that attempted to establish weeds as threatening human health, endangering public safety, and marring the aesthetic integrity of the city and by extension the nation as a whole. Weeds, weedy lots, and absentee property owners throughout the city were villainized as disrupting attempts

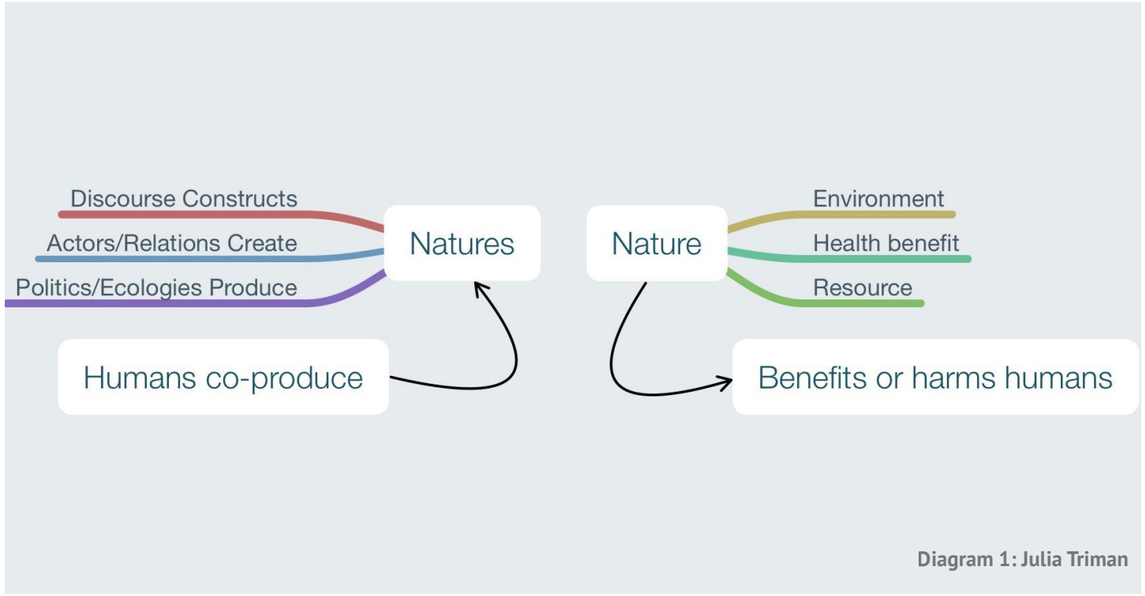

Diagram 1: Julia Triman

at order and basic sanitation and cleanliness. In March of 1899, "An Act to cause the removal of weeds from lands in the city of Washington, District of Columbia" (The Weed Removal Act) passed with very little debate or discussion by the United States Congress. When the Act passed, expectations were established that "the weed problem" would be solved, and that people would no longer need to tangle with weedy unwanted plants throughout the city.

In the ensuing years, however, the Health Officer of the District of Columbia made a very convincing case that weeds actually did not pose any sort of health risk to District residents, and that the Act should be repealed or overturned entirely due to lack of risk and impossibility of enforcement. Attempts to achieve a "weed-free" city were impossible, not just because of the plants' abundance and superior ability to reproduce and occupy greater and greater space, but also because of the largely unacknowledged relationship between human activity and material and the plants' success and livelihood. The Weed Removal Act reflected the legacy of colonial ideals and visions of a perfect, utopic place free of visual and material evidence of messiness and anything antithetical to either orderly "nature" in the form of planted trees and gardens or "wild" places. Weedy plants offered an opportunity for people to express a vision for taste, simplicity, and order by providing material antithetical to those ideals: the weeds of the time period revealed fissures in utopic visions for the city, and persisted in thwarting these visions despite legal and physical attempts to eliminate them.

Wildlife

My final case chapter jumps ahead one hundred years to another series of discourses about the status and presence of animals in the District of Columbia. Environmental discourse and public expectation for "nature" and "wildness" to be kept either in a designated place or outside the city altogether continued throughout the twentieth century and is reflected clearly in the discourse around Washington's wildlife regulatory and planning activity in the 2010s. The particular mix of both a municipal-level Wildlife Protection Act along with being the only city to have a State Wildlife Action Plan for an urban context makes Washington an extremely unique and interesting case with comparatively a great deal of recent discourse related to urban animals.

The city's controversial 2010 Wildlife Protection Act attempted to establish basic rights for humane treatment for "nuisance wildlife" in the city, and raised and incited a great deal of discussion and argument about the status of various types of animals as welcome or not in the city. Pest control operators argued that the new law would make their businesses more expensive, while those affiliated with the Humane Society of the United States and other similar organizations argued for the moral and ethical imperative to treat animals with respect and care. Though the 2010 Act explicitly excluded commensal rodents from protection, misinformed elected officials created a firestorm of political banter about how the new law would cause District residents and officials to dump dead rats in nearby Maryland and Virginia. The law itself and the intense debate, both informed and not, that it inspired speak to the level of fear people have for heterotopic animals sharing city space and the need to continually work with urban animals who are part of city life whether part of grand visions for orderly "nature" or not.

The 2015 Wildlife Action Plan, simultaneously narrow in scope and broad in reach as a part of a Federally mandated plan at the state level, but with implications nationally and globally, similarly incited a great deal of angst about the status of animals as nonhuman members of city, with a strong emphasis on maintaining and promoting separate "nature" spaces apart from "developed" areas in the city. The Wildlife Action Plan is perhaps the most explicit of all examples herein, in which environmental discourse aligned with dualistic visions of how humans and "nature" do and should operate. These dualistic visions are abundantly clear and reiterated throughout the plan via the selection criteria for species of greatest conservation need, the commentary about "precious natural areas," and the visual material including maps that establish "nature" as a

Diagram 2: Julia Triman, Sarah Pate, and Maddie Hoagland-Hanson

special and very small part of the city that must be protected.

However, the discourse around the Plan reveals a much more complicated and interconnected relationship between humans and animals not so easily resolved or planned for, one in which the lives of animals such as feral cats become a battle ground for larger arguments about how to reconcile the value of individual animals' lives. Designation as "wildlife" is a proxy for animals that are loved by humans, and environmental discourses surrounding the 2010 Act and the Plan are couched in socially constructed and culturally specific language that is not "common sense" but rather adopts a very particular positionality in which some animals, particularly those rare and adorable to humans, "win" and others lose. This chapter of my dissertation questions particular meanings of "wildlife" under discussion in the District of Columbia in the 2000s and 2010s, and how vocabularies of wildness influence the types of animals humans choose either to protect or to eliminate from urban landscapes by means of regulation, planning, and expenditure of funds.

De-regulating Wildness

Each of these cases builds an argument in favor of de-regulating wildness – of imagining current and future cities as places where a variety of plant and animal life can flourish, not only species and types of plants and animals loved and admired by particular humans. I propose that future plans and planners might expand definitions of "nature," or abandon them entirely in favor of new terms. A plan for the plant and animal life of a city should consider holistically all plants and animals living in the city, not just those that are beloved for their benefit to humans. Rather than focusing on animal "protection," for example, planning efforts to support animal life in cities might best be focused on mitigating human impacts and recognizing and realizing the potential for animals to co-create material and social aspects of what a city is and can become.

My exploration of the natures in planning discourse demonstrates the need to plan for urban plants and animals in relational ways that acknowledge both the social construction of "natures" and the immediacy and importance of nonhuman materiality as part of urban life. When "nature" is narrowly conceived and inflexible, when certain plants and animals are prioritized over all others, and when planners and designers do not see themselves and their work as intimately connected and in relationship with the abundant and unplanned life that does and could exist (as depicted in Diagram 3), this seriously limits the potential for sensitive growth, creativity, and flexible thinking that will create resilient sites, cities and regions.

Questioning Natures

Do I still "believe" in the nature that I thought I knew before I started this academic journey? What are the implications of deep fundamental questions about the nature of nature – what am I suggesting about practice? At the end of the day, I don't imagine my work denigrating or refuting all of the amazing things being accomplished by urban and environmental planners working with "nature," many of them profiled in the pages of this journal and in previous issues. I think ultimately, what I hope I have accomplished for myself and anyone who cares to read what I have written is deeper questioning, a more expansive view of what "nature" is and could be, and a much more critical and less simplistic stance on the value and promise of "nature" – not one that negates possibility and promise of hopeful futures, but one that might re-imagine our intimate entanglement and relationship with plants and animals of all sorts.

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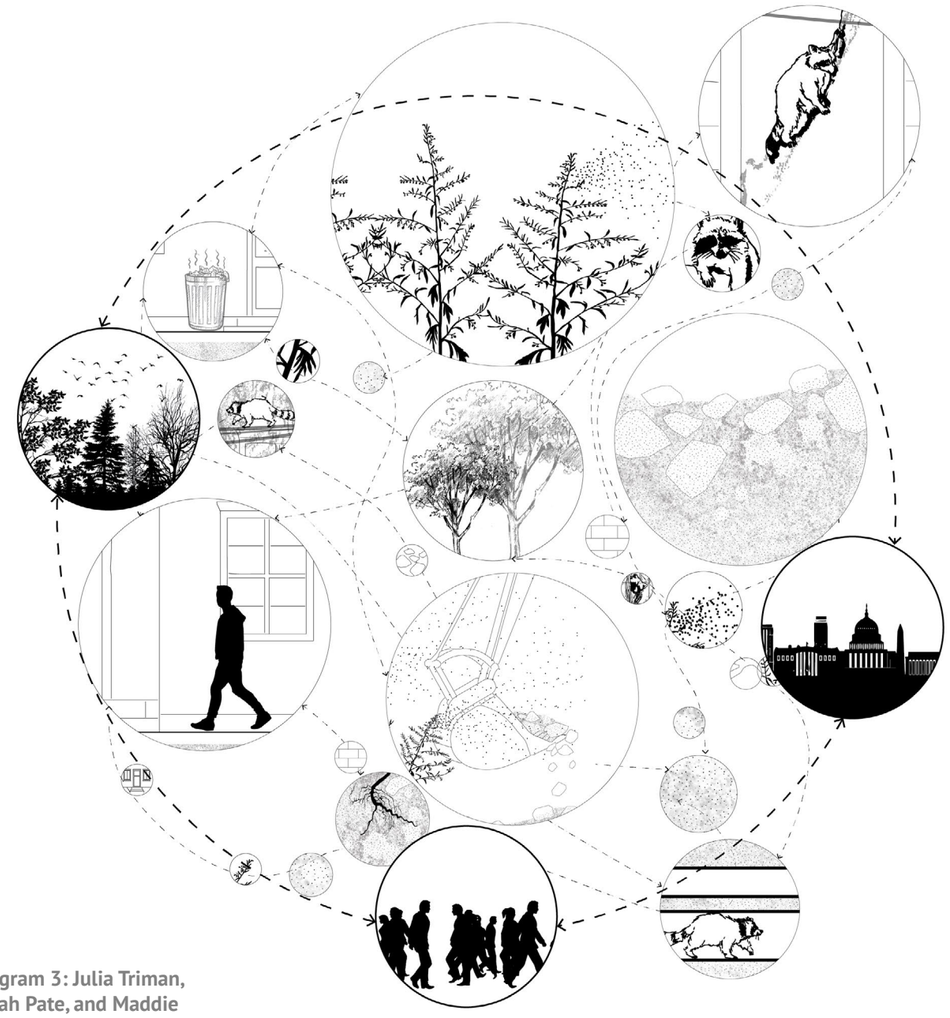
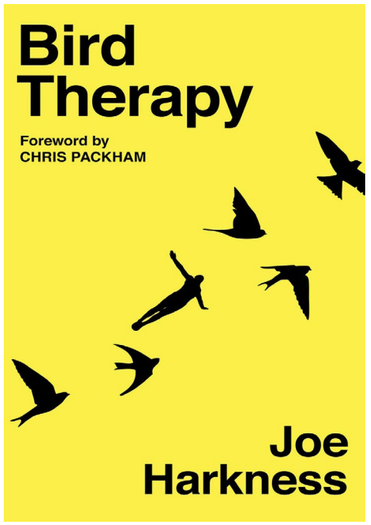


Diagram 3: Julia Triman, Sarah Pate, and Maddie Hoagland-Hanson



Joe Harkness (2019). *Bird Therapy*. London. Unbound. Foreword by Chris Parkham.

Review By Tim Beatley

These are discouraging times for birds and bird lovers. The release of the October 2019 Cornell Ornithology Lab's groundbreaking study shows a startling decline in the number of birds that exist today—nearly a 30% decline, or an astounding 3 billion fewer birds compared to 1970. It is a shocking finding, and stark evidence of the many profound ways our ecosystems are unraveling before us. As the title of a recent op-ed written by two of the study's authors says, "The Crisis for Birds is a Crisis for All." The realization that birds contribute immensely to the quality of our lives is further demonstrated in Joe Harkness's new book *Bird Therapy*.

Harkness's personal story is about how birds have helped him survive mental illness, and aided in his recovery from a 2013 breakdown. He suffers from obsessive compulsive disorder (OCD) and generalized anxiety disorder (GAD). He promises that the story will not be a sad story and it isn't. It is uplifting and hopeful: "It is a joyous journal," he says early in the book, "charting how the discovery of bird-watching transformed my life for the better." For him the epiphany came while on leave from work, watching a circling buzzard. Seeing that bird, Harkness writes, "represented freedom and it represented hope."

Part birding travelog, part personal story of recovery, the book is a compelling and highly readable account that makes a strong case for the important role that birds and bird-watching can play in maintaining mental well-being. Along with personal narrative, Harkness reviews the scientific literature about the positive impacts of birds and birdsong. Along the way, the book provides "practical tips" for birding (which serve as dividers between chapters) and describes what he has learned from fellow birders through his own online surveys and social media interactions.

Harkness explores different ways to engage with his love of birds and finds some of the usual methods of mainstream birding off-putting--such as twitching and list keeping (twitching is the process by which birders track down and photograph notable species of birds found by other birders). But he does find purpose and connection through participating in citizen science. And he experiments with staking out what birders refer to as a "patch"—a site or area of land that they return to frequently to watch and record bird life. This practice, we learn, can be traced back to the famous naturalist Gilbert White, who wrote about it in his important 1789 book, The Natural History of Selborne. I like very much the idea of adopting an urban "patch," or an opportunity to observe change over time and to learn deeply about the co-occupants, birds and otherwise, of a specific and particular place.

The special qualities of birdsong receive attention in numerous places in the book. He reviews the scientific evidence but also conveys the deep personal sense of how these sounds and voices reach him. He describes the song of a tree pipit in this way: "It was a sound so sweet that it seemed to carry light into a dark moment."

Without birds around us every day, perhaps every hour, we all suffer in some way, whether this is clear to us or not. Harkness's mental health challenges are individual and serious, to be sure, but there is no question that birds provide for us all a natural cocktail of hope, wonder, calmness; they provide moments of uplift and beauty, as important as anything else we might encounter in the city. These extensive and everyday mental health benefits of birds are largely unrecognized and certainly uncounted, but considerable as Harkness's book attests.

The main point Harkness seeks to make is the critical role that birds can play in mental health and well-being. This is the message he wants to spread: "One day I hope our doctors will be able to prescribe sessions of birdwatching and I will continue spreading my own wings to help this happen." Bird Therapy he declares in his final chapter "is a genuine thing now, and not just a concept." Thanks to this book, we now have a first-hand account and a clarion call for seeing the birds around us in new and beneficial ways. We have much to do to stop the unraveling of the ecosystems that support bird life (and human life) but now we have even more evidence of the role they play in making our lives more meaningful and healthy.


Author with Chris Packham
Photo Credit: Birdtherapy.blog


Photo Credit: Benjamin Lambert

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Waterways and Dreamscapes

By Lannah Marshall

***Reprinted with permission from** A Flash of Silver Green: Stories of the Nature of Cities **(2019), a collection of short stories from The Nature of Cities examining the prompt: What are the stories of people and nature in cities in 2099? Learn more about the collection** here **and about the** next round of stories being collected now**.*

It had been a long summer, back in 2099. Grandpa offered to take me off Mum's hands while she did extra shifts in the OR. We stayed in his narrow boat on the canal that ran through the city's west side.

Grandpa called himself a merchant, but for me, it was magic. I'd never had the chance to see the canals properly before. From the ground, they looked like free-flowing water streams that wove between buildings and underneath motorways. They shone rainbows down during the day and glistened at night.

Riding one didn't destroy the magic quite like Mum said it would. Instead, I felt like I'd been taken to a different world.

I saw forests atop skyscrapers, with willows that bowed into the passing water. Bamboo, ivy, and ferns were strung across streets, well above the denizens below.

"For the birds," Grandpa told me as we travelled by. It wasn't until later that evening when I saw the murmur of starlings take flight that I understood.

"For the insects," Grandpa said with a wink. He'd been watching me all day. I thought I'd have spent my whole day staring at the fish, but instead, I was gawking at birds, drooping foliage from balconies, and solar sails that powered the density below.

Grandpa took me to the floating market between the Ingo Tech offices and the Marla Grand hotels. We took a route called the Silicon Steps, locks in the waterways that filled with water to lift us even higher. At nine, I wasn't very useful. Twelve steps in all, and by the third, I was sat in the boat, watching the rise and fall of water and fish that were enjoying the ride.

Below, through the clear base of the canal, I saw the fountain that I walked past to get to school and, a few years later, would climb into to impress a girl at college.

Grandma was waiting for us at the barge, and she started opening shop as soon as we arrived, pulling up the walls of the narrow boat and hanging up vegetables for display. Grandpa helped me over to his stall of spices, vegetables, and fruits of various shapes and sizes. Some I still struggle to name, but I could never forget the taste.

Each stall sold the weird and wonderful, from succulents to trinkets, to blankets and wines. Within the hour, the place was so full of boats and barges people walked from stall to stall with the same enthusiasm and balance I had on the ground, and if it weren't for the unsure, wobbling tourists, I would have forgotten where I was entirely.

We sold bags of spices. I managed to sell the ugliest apple I'd ever seen, and Grandpa rewarded me with a pick of pineberries. Umbrellas came out at midday, and the rain lasted mere minutes without relinquishing any of the heat.

Grandma had disappeared for a time, travelling up and down the canals, selling food to tourists on the communal levels of hotels, apartments, and offices that looked on the waterways.

"Curry later," he said as he nudged me. "Hard work is always rewarded."

"Will I work up here one day?" I asked.

"Sure!" He cleared fruit, but his eyes didn't leave me. "You like it up here?"

"It's magic."

"Sure is."

The umbrellas stayed up for the afternoon, with the heat welcoming insects. Grandpa slathered me in citrus and had me sit on the counter to sell more produce.

Once the rush hour finished, the sellers started packing up their wares. A few bits were traded between the merchants, with Grandpa selling a small jar of saffron for a beautiful blue quilt. Grandma returned, grinning with empty cupboards and a tin full of cash.

I smiled. Mum got her quick thinking from somewhere, and while it was quiet, I started to wonder why she hadn't brought me up here before. Maybe it wasn't as important as saving lives—that's what Mum did. Grandma and Grandpa were just merchants on a fancy canal.

The fish followed my finger as I dragged it along the water, and I felt a pang of frustration, flanked by two dreams.

Between the thin algae and the artificial pebbles that lined the bottom, I counted fish, mostly bottom feeders that Grandpa said were the best cleaners up there.

"What about that one?" I asked him as I caught sight of a distressed fish. It was in the centre of the floating market—or rather, where the market had been. The water so clear I could see the bright, red plastic it was caught in. Before I could finish asking, Grandpa was calling out to the other sellers as he climbed aboard a kayak. Noise erupted, and a net box was sent out to trap the fish.

Grandpa went in and under, emerging with a small, struggling catfish. Assisted by the clothes merchant, he cut the plastic from the creature's neck and released it back into the water. It swam away, looking giddy with relief.

"See this," said Grandpa as he swam up to me, waving the red plastic for all to see. "These used to be clear, and the whole world could turn a blind eye to them. That's why they're red now. No more 'out of sight, out of mind' ignorance."

He tore it up and threw it in a compost bin as I swallowed a lump that had risen in my throat. It felt like I was being scolded, but then I saw the belly of the canal and the city below. I'd never wondered why the waterways were see-through.

I'd always thought we were just showing off our lovely clean water and neat engineering tricks.

Then it hit me. Sure, Grandma and Grandpa weren't surgeons, but there were different ways to save lives.

I knew what I was going to be.

And I didn't even have to wait to start.

As an aspiring author, Lannah Marshall enjoys creating fantasy and science fiction that challenges pessimistic predictions of the future. Inspired by the impacts of technology, as well as innovation influenced by nature, she hopes to write fiction that portrays a greener, more optimistic future that offers answers to our contemporary fears.