

BIOPHILIC CITIES

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THE NATUREFUL CITY Birds (and Mountain Lions) Are Changing Cities | Tim Beatley

BLUE URBANISM Urban Seascaping | Soo Jung Ryu

BIOPHILIC CITIES NETWORK Indicators of a Biophilic City | JD Brown

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Many individuals and organizations are due thanks for partnering with Biophilic Cities. We owe special thanks to the University of Virginia School of Architecture for hosting and supporting Biophilic Cities in many ways.

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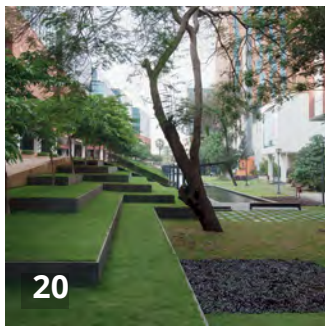
White-crowned sparrow
Photo by Andy Holmes



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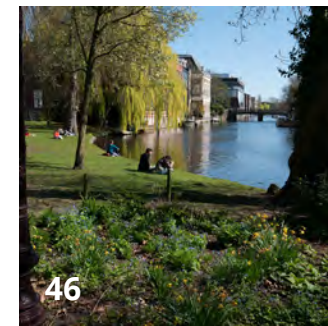
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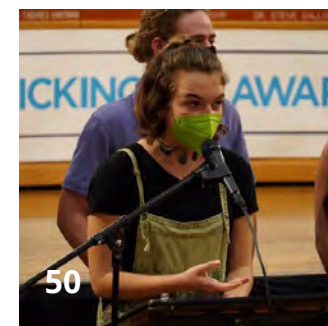
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Female Mountain Lion in Verdugos Mountains with LA City lights in background
Image Credit: National Park Service

Birds (and Mountain Lions) Are Changing Cities

By Tim Beatley

As a life-long lover of birds, I will say today that they have certainly saved me many times. Their calls and chirps, remarkable antics, and aerial beauty never fail to produce an uplift in me on any day, when I am sad or otherwise. They provide remarkable interest and color to our human lives, and I think I am not alone in my extreme admiration and fanhood. In exchange, we mindlessly build glass boxes with windows that kill and cut down trees that serve as home and habitat.

Recently, my book *The Bird-Friendly City* has been translated into Korean, with a wonderful new and quite striking cover (on

opposite page), along with a lot of words and characters that I am unable to decipher between the pages. It took a visiting Korean student here at UVA to provide a translation of the title, which they had changed unbeknownst to me. The Korean title, she told me, is “Birds Changing Cities.”

How brilliant, and how true indeed.

Luckily, there is work underway in cities around the country and the world to make sure buildings and cities are safer for birds. The Korean translator of my book, Kyungmin Kim, offers in an article in this issue

of the Biophilic Cities Journal one hopeful account of the remarkable changes underway in his country, and the growing awareness of and care for birds. I will have to ask him about the title translation and how he came up with that wonderful formulation.

Birds do change cities, all cities, and the people who live in them, by their magical presence. They also save cities as well. My colleagues in Pittsburgh recently reminded me of the story of how that city’s largest new park—Hays Woods—came to be. A former industrial site, it is now a large block of forested

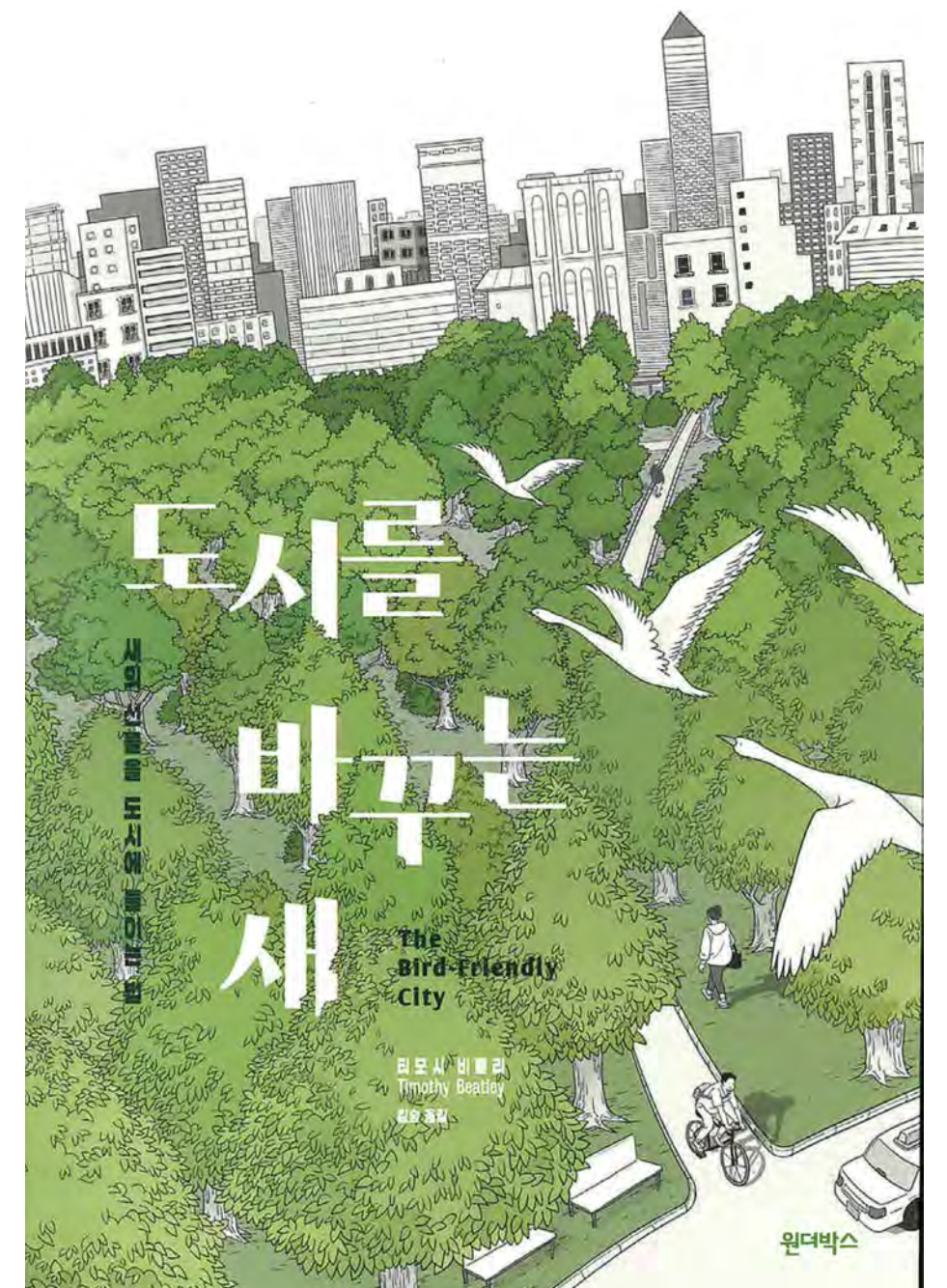
land with extensive frontage along the Monongahela River. It was not until a pair of bald eagles began nesting there almost a decade ago and flocks of birdwatchers began showing up to see and watch them, that the idea of setting this land aside as a park began to gain traction. The developer had explored many alternatives, including developing it as a racetrack and casino, before eventually selling it to the city. This story is, I think, suggestive of the political power birders and bird organizations might be able to exert in cities on behalf of nature.

The last few months witnessed the sad death of P-22, perhaps the world’s most famous mountain lion who famously walked the Hollywood Hills and became a symbol for coexistence of humans and non-humans; as well as the wildness that our cities, even when highly developed and urbanized, can exude. I have been especially impressed and heartened by the outpouring of grief and sadness for this lion, and the depth of emotional connection and care it reflects. Few animals get an obituary in the New York Times, or a sell-out crowd at the Greek Theater in Los Angeles, commemorating and celebrating his remarkable life. At one point, the crowd engaged in a sing-along to the song “The Lion Sleeps Tonight.” The images from this event tell much of the story, especially the lion-ears worn (but not exclusively) by the younger members of the audience. Attendees are seen to be sad in these images but also joyful and celebratory.

Rep. Adam Schiff, who counted P-22 as a constituent, has observed in the past how the city became united in their “shared affection for our neighborhood mountain lion ...” No small feat in these times of acrimony and division. P-22 had many friends and lots of admirers. And some, like Beth Pratt, Regional Executive Director of the National Wildlife Federation, stood up to strongly advocate

for changes that would make the city more hospitable and safer for wildlife. I like that she described herself, in the New York Times obituary, as P-22’s “friend and spokeswoman.” The many nonhumans that we share our cities with need supporters, advocates and, yes, spokeswomen and spokesmen.

P-22, arguably, has helped shape a new collective image of what



a city is and can be, and more generally (for the world) what we might imagine urban life will be like in the future. The now famous image of P-22 with the Hollywood sign in the background is helping to change our collective perception of what a city is. Maybe it will be as profound a perceptual shift as the impact that a generation of gleaming skyscrapers (think Empire State and Chrysler buildings) had on New York City, and many other cities in the 1930s. Such a radical update to our urban imagery would be welcome indeed. We can envision a new notion of living in multispecies environments as a part of, rather than separate from, the larger biological community

of life (to paraphrase Aldo Leopold). This is not the first time when humans have mourned and commemorated the passing of another species or where close affection for a nonhuman resident has shaped our collective sense of urban home. One thinks of the loss of Granny or J2, the matriarch of the J-Pod of the southern resident population of orcas living in the waters of the Pacific Northwest. There were at least some local obituaries, and at least one official celebration of her passing. Or there is the example of Barry, the barred owl, that drew so many to Central Park to see him in his usual tree. Like P-22, these

examples show that there is a need to redouble our efforts to not only pay attention to the presence of urban wildlife, but to also admire, watch, and enjoy them, as well as take meaningful steps to make cities safer places for them.

P-22 was hit by car, an ever-present danger in American cities certainly, but he also likely suffered from ingesting rodenticides. Evidence suggests that Barry also suffered from poisoning. So, there is much to be done in genuinely working towards the design of truly biologically inclusive cities. On this point, we are excited to welcome the City of Los Angeles into the Biophilic Cities Network



Rendering from LA Wildlife Ordinance Pilot Study
Credit: Katherine Superfisky Urban Ecology Studio,
California State Polytechnic University, Pomona

and for our new colleagues there to share the many remarkable things underway in the city to support ethical coexistence. This includes the adoption of an innovative wildlife ordinance (which has so far passed a vote of the city's planning commission, but not without some opposition from property owners), and the building of the world's largest wildlife passage (the [Wallis Annenberg Liberty Canyon Wildlife Crossing](#)) that, when completed in 2026, will allow mountain lions and other species to safely cross the ten lanes of Highway 101.

P-22 and (hopefully) the many mountain lions to follow in his

paw-tracks will (continue to) change that city for the better and other cities as well. LA will now forever be understood as a place where a glimpse of wildness and majesty could be had; a moment of awe and wonder and delight, and a sense of optimism about the world, might be in the offing. Like the birds that are so special to me, P-22 may in no small way have saved the city.

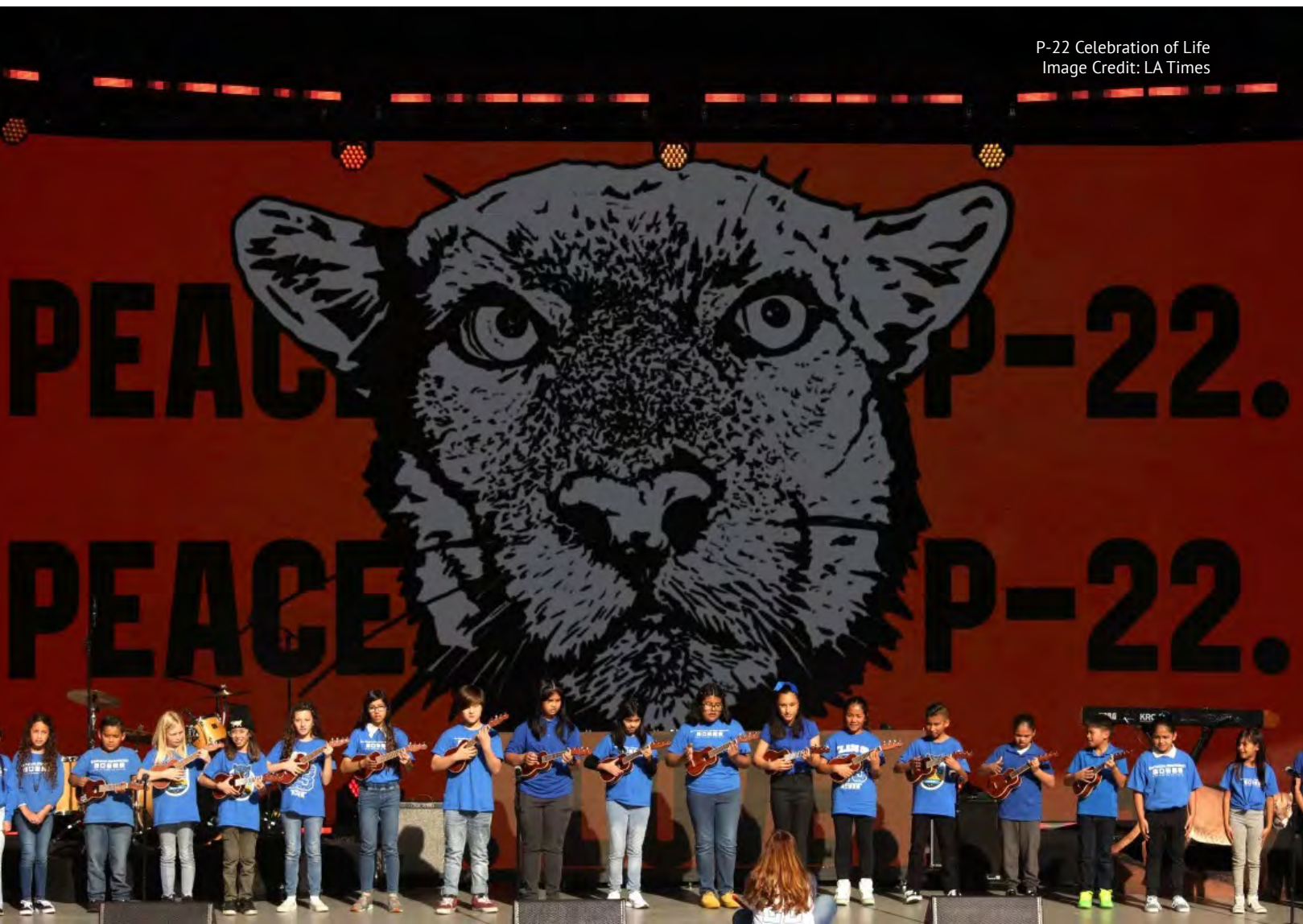




Image Credit: Team Membrane - Josephine Philipsen, Luisa Brando, Andres Hernandez and Vejle Municipality

Urban Seascaping – How to Live Not Just By the Sea But with the Sea

By Soo Ryu

Urban shorelines are markers of the contested site between the city and the sea. For centuries, coastal cities have expanded their influence further into the sea in the form of land reclamation (also termed “[ocean sprawl](#)”), which is responsible for habitat loss, decrease in biodiversity and water pollution. The sea has increasingly become a backdrop to support the growth of business-as-usual (B-A-U) urban developments that are not conducive to the changing climate nor capable of moving beyond the exploitative and superficial engagement with the sea that most cities practice today. However, the consequences of climate change are challenging the sprawl, as the sea is pushing back onto

coastal cities in the form of sea level rise and frequent storms. The dominant way coastal cities have responded to this encroachment has been defense-driven mechanical handling of water via sea walls and pumps, a symptom of a reactive rather than proactive response in addressing the climate crisis.

In response, my research, undertaken during a three-year PhD fellowship at the Aarhus School of Architecture in Denmark from 2019-2022, develops an initial hypothesis and a critical proposition called “[Urban Seascaping](#)” as an alternative way to re-envision urban coastal developments by exploring the potential of marine nature as an active part of the

sociocultural cityscape and its future resilience. Nature-based solutions are emerging as a key component in coastal adaptation and mitigation strategies as climate change mitigation. Furthermore, the green transition of coastal cities is becoming paramount in addressing the rapidly approaching IPCC deadlines/Paris Agreement. The benefits of nature-based solutions are myriad, as they lessen not only the impact of storm surges or coastal erosion but also their capacity to capture carbon, produce oxygen, filter water pollutants, and increase biodiversity as habitats, to name a few. Thus, the research asks: How can coastal cities of Denmark integrate the sea and its lifeforms to contribute

towards re-envisioning urban development in light of a sea level rise and frequent storm surges?

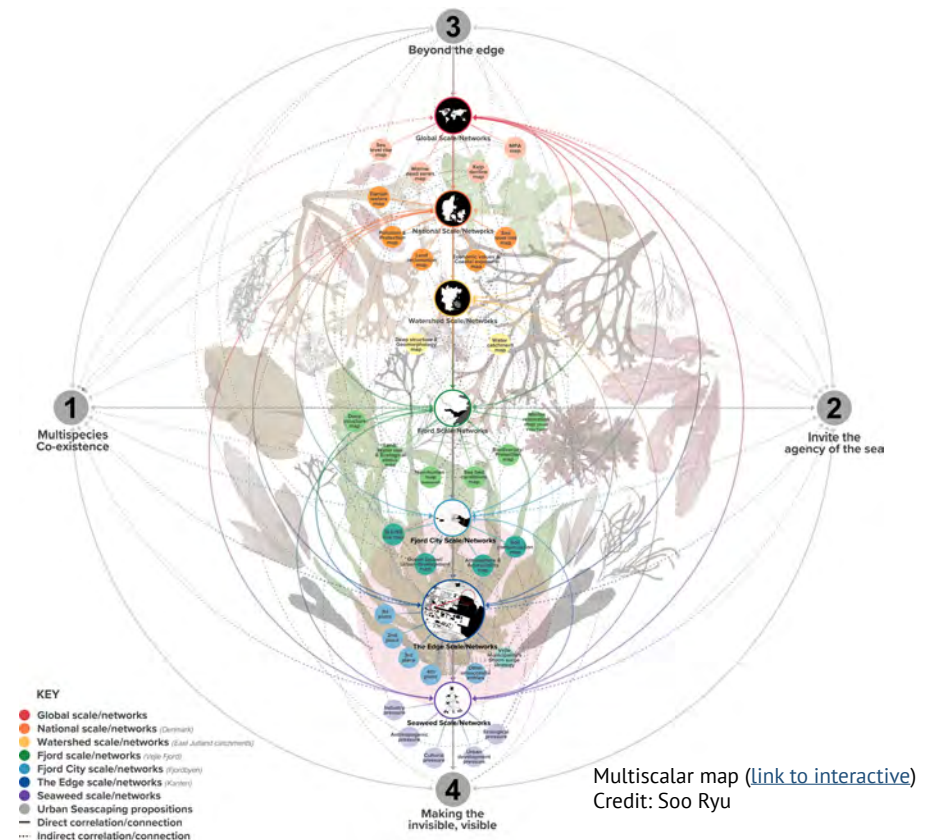
Too often, issues regarding the changing interface between the city and the sea have been the domain of applied science (i.e. coastal engineers) and natural science (i.e. marine biologists/ecologists) with an emphasis on defense and marine restoration. There has been a lack of engagement from the spatial design disciplines, which might offer a transdisciplinary holistic approach to re-envisioning the entanglements between cities and the sea. However, in the past decade, emerging practices such as [Blue Urbanism](#), [Coastal Urbanism](#), and [Urban Ecology](#) have gained traction as a framework for coastal urban development. Therefore, to explore further the role of spatial design disciplines in aiding the increasing complexities and the need for the synthesis of transdisciplinary approaches, the second research question of this project asks: How can design research methods and practice from the spatial design disciplines of landscape architecture, urban design, and planning contribute to responding to the changing spatial boundary between city and sea, human and nonhuman, due to climate change?

Much of the existing research on how to integrate marine nature-based solutions in coastal cities by the spatial design disciplines has largely focused on eelgrass restoration, salt marsh and meadows. In contrast,

very little attention has been paid to seaweed, the potential of which remains understudied in the field. This is a problem because the different species of seaweed have several unique and positive characteristics that may contribute to marine nature-based solutions. Seaweed can provide not only beneficial ecosystem services but also influence human culture, for instance, as local cuisine in the form of a sustainable and healthy form of food or in its many applications in medicine, cosmetics, and bio-material, to name a few. Therefore, this project focuses on seaweed as a representative of marine nature in the context of urban coastal development. With seaweed as the lens to investigate the research questions, the project develops the concept of Urban Seascaping, which invites the idea of “seascaping” with seaweed in coastal urban

environments, much like the way we landscape with trees and flowers. Ultimately, the intention of this conceptual proposition is to find alternative ways of reconceptualising the current dualistic relationship between the city and the sea that characterise B-A-U developments.

Furthermore, the concept of Urban Seascaping has been developed to present a set of guidelines and perspectives that together provide a framework that can aid in assessing and making informed design decisions for waterfront developments. In the project, four main propositions are put forward. The first proposition departs from an emerging approach called “[Multispecies Urbanism](#)”, which suggests that cities should not be designed only for human occupation but for other (nonhuman) species. In the context of this research,

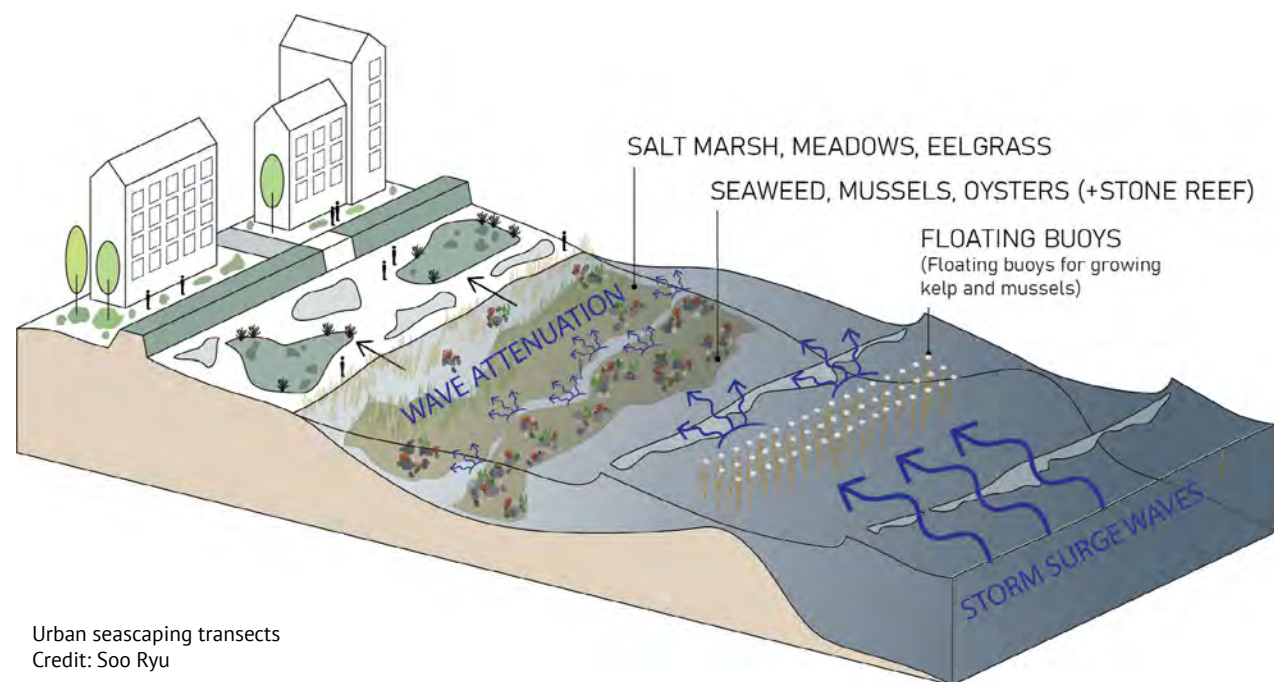
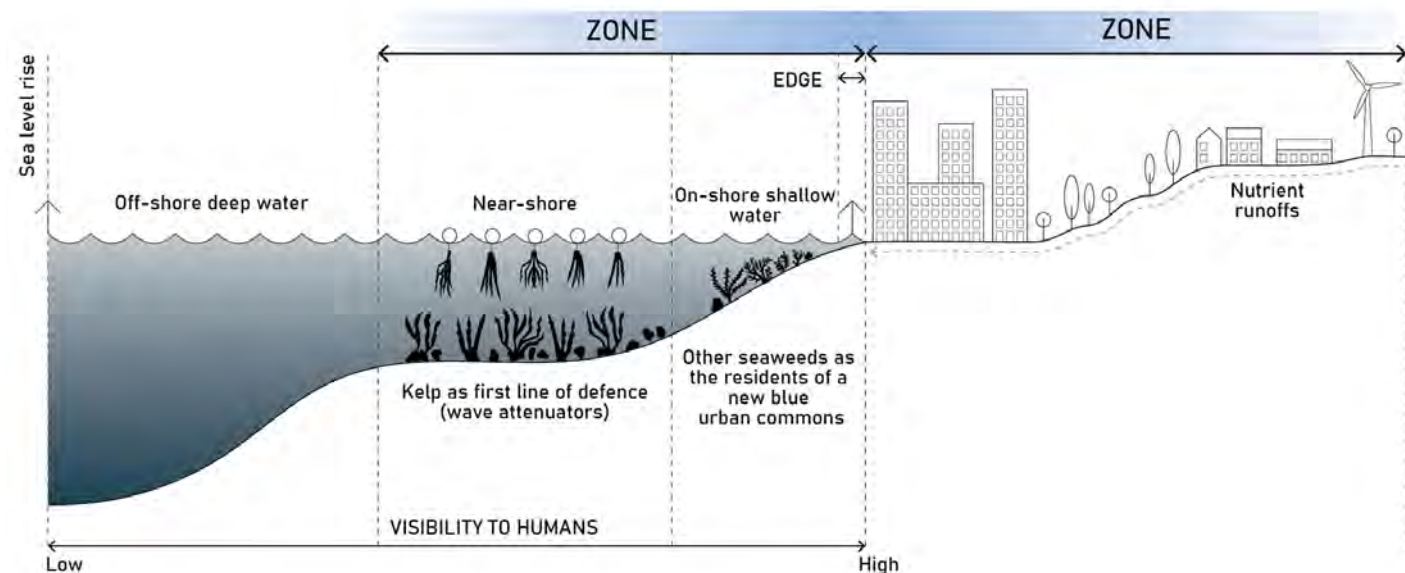


Multiscalar map ([link to interactive](#)) Credit: Soo Ryu

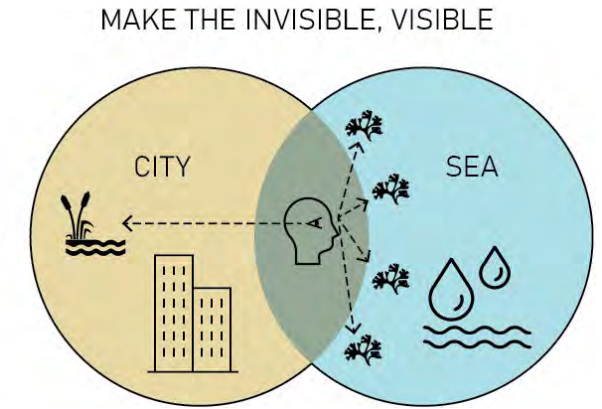
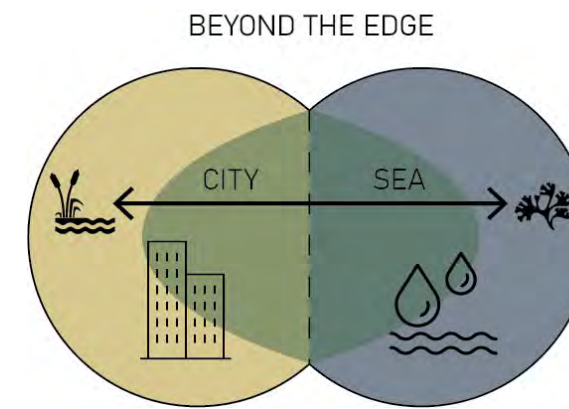
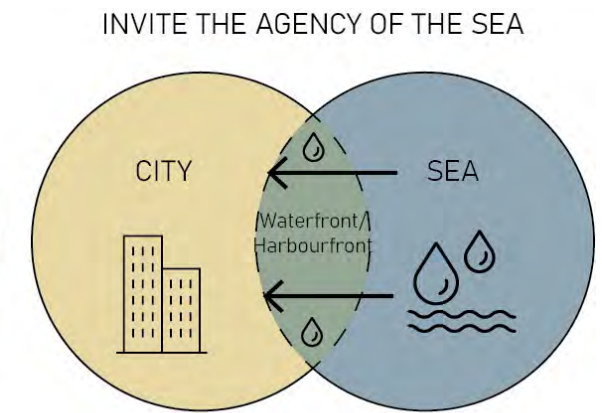
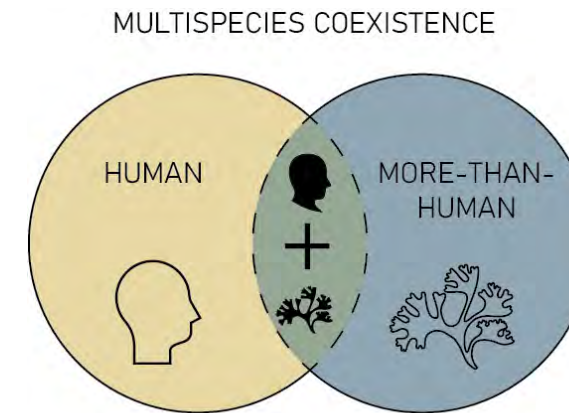
this means extending the design thinking to include marine life (i.e. seaweed) as a design client and as a rightful resident of coastal cities that people need to learn to coexist with. The second proposition involves a more radical approach to coastal development, which suggests inviting the agency of the sea into the cities. This means departing from the current approach to constantly expand further out into the sea in the

form of land reclamation and to embrace the rising sea level with the intention of transforming the waterfront areas into a more hybrid and dynamic place. The third proposition emphasises the need to go beyond the current preoccupation with “the edge” in favour of “a zone” when implementing nature-based solutions. This means addressing the interconnected networks of water that expand further into the landscape and out into the

seascape, effectively challenging the conventional conception of a site. The last proposition highlights the importance of making visible marine lifeforms that are otherwise imperceptible to the human residents of coastal cities. This proposition addresses the longstanding exclusion of marine lifeforms in urban development and planning and thus seeks to engage in a spatial design approach that can bring them to the foreground and



Urban seascape transects
Credit: Soo Ryu



Urban seascape principles
Credit: Soo Ryu

make their presence more known. Hence, Urban Seascape serves as a critical proposition to induce transdisciplinary discussions on the value of integrating the forgotten and invisible agency of the marine realm into the visible urban realm for an equitable meeting place between humans and nonhumans. It contributes to the emerging field of blue urbanism and coastal urbanism from the lens of seaweed. That being said, it is not only a story about seaweed, but an ongoing and unfinished story of relations, entanglement, response-ability and extending our understanding beyond our immediate borders. Urban Seascape with seaweed presents a small yet significant piece of the puzzle in addressing the climate crisis and the role the spatial design disciplines can play in coastal urban development.

Resources:

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Lithograph by Otto Krebs, 1874, showing bird's-eye view of the City of Pittsburgh, Pennsylvania from Mt. Washington. Image Credit [Wikipedia Commons](#)

How Is Biophilic Urbanism Being Used in Planning to Rejuvenate Post-Industrial Cities?

By Andrea A. Kerley

What I Asked and Why

I am impressed with older European cities that merge nature into their development with apparent effortlessness. Of course, it's easy for them, they're old, was my first thought when looking at cities such as Barcelona and Vitoria-Gasteiz, Spain, and Birmingham, England. Though the U.S. is not as old as most European cities, it does have old cities. Cities that have been functioning since before the founding of the country. The U.S. has a lot of post-industrial

(or "legacy") cities, many of which are not faring as well as Birmingham, a post-industrial city in the UK. Questions began to form in my mind: "What did Birmingham do to make a difference? Can those changes work in the U.S.?" I found the commonality in the Biophilic Cities Network (BCN). Two of the most iconic post-industrial cities in the U.S. (Pittsburgh and Milwaukee) are partner cities in the network, along with the aforementioned European cities.

What are some of the oldest

cities in the U.S. doing to bring nature into their spaces? For me, this is the most important aspect to be addressed when planning or rejuvenating a city. As I mulled over topics such as biodiversity, species specific planning for cities, community gardens, I remembered why I wanted to pursue a career in planning: to make cities the best that they can be so that people would want to live in them – in turn stopping urban sprawl and leaving the countryside in a state that can sustain rich biodiversity and provide complex ecosystems

for species as well as sustainable locally sourced food for people. Reviewing the transformation of many former industrial European cities into thriving sustainable communities, was the catalyst for reviewing the economic situation and population decline of many former industrial U.S. cities. These cities are ripe for rejuvenation. Many of them are empty with room to grow from the outside inward – a reverse sprawl needs to happen.

The purpose of my research was to discover if shrinking cities were incorporating green urbanism and biophilic actions into their master plans for the purpose of creating a sense of place and prosperity for people. The study hypothesized that various master plans of U.S. post-industrial cities, which are also members of the BCN, would emphasize biophilic urbanism

indicators more so than city plans from non-network cities. Through a review and evaluation of policies, plans, initiatives, and strategies of four U.S. post-industrial cities, two of which are in the BCN and two of which are not, I sought to compare how these cities are including biophilic practices.

What I Found

The results of my research supported the hypothesis that post-industrial cities are using biophilic urbanism to merge nature with the built environment. Likewise, cities which are members of the BCN are more adept at doing so than post-industrial cities which are not affiliated with the network. Through this evaluation of community plans, several observations were outlined according to the endeavors

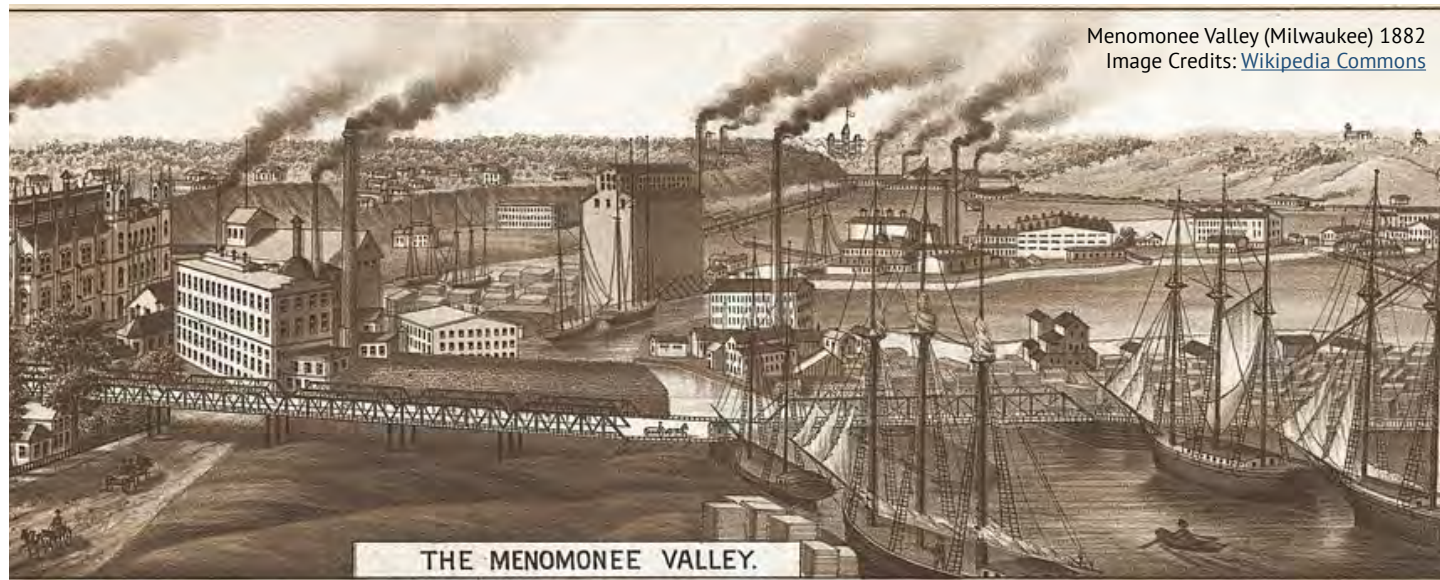
of these cities' rejuvenation processes: (1) post-industrial cities that are members of the BCN are better equipped to address the needs of the people and the environment than the cities that are not members of the network; (2) there are some indicators where both types of cities could improve; and (3) there are indicator scores in which neither BCN nor non-BCN cities scored well.

Methodology

My study contained four categories: Factual Basis; Public Education and Community Outreach; Policies, Strategies, and Regulations; and Incentives. Each category had a variety of indicators that were developed based on qualities of biophilic urbanism and green urbanism within U.S. post-industrial cities. A total of 27 indicators were



Duquesne Incline at night, Pittsburgh
Photo by Vidar Nordli-Mathisen on Unsplash



chosen to be included in the evaluation rubric. A literature review was undertaken to determine which indicators were the most important for a biophilic urbanism evaluation. The methodology relied on the evaluation protocol that was developed with the idea that biophilic goals can be achieved through city planning, policies, and strategies that incorporate multiple modes of green infrastructure. The development and implementation of biophilic urbanism and green urbanism through educational programs, adaptive reuse of buildings, utilization of vacant land to promote health and wellbeing, along with other green infrastructure practices can provide legacy cities a new approach to re-inventing their city brand. The cities that are members of the BCN performed better in all categories than the cities in this study that are not members of this network.

Why This Matters

This research can provide a point of reference for other

cities to review when seeking to implement biophilic and urban greening goals. This research is valuable for post-industrial cities that must recover their populations and economies to meet the growing demand and needs of an ever increasing U.S. population. With an increasing awareness of environmental and social resilience, the need to rethink the methods of incorporating biophilic concepts into urban areas needs to be prominent within shrinking cities' plans (Beatley and Newman, 2013). As cities in the U.S. implement green projects and strategies, they are realizing that they must adapt and evolve; not just create new places (Moulton, 2019), and that the commitment and will of the population is a crucial element to the development of a sustainable city (Loures and Burley, 2016).

How Cities Can Do Better Based on These Findings

The purpose of this research was to evaluate, through a biophilic lens, the approaches that four U.S. post-industrial cities have

incorporated in their city plans to achieve urban greening. According to Beatley, a biophilic city should be designed to have the following characteristics: a reduced carbon footprint; a resemblance of natural systems; a symbiotic relationships with the surrounding communities; a focus on locally sourced food, energy, and economy; facilitation of more sustainable and healthier lifestyles; and an emphasis on an overall high quality of life (Beatley, 2012). Based on review of the literature, the expectation was that the BCN partner cities would achieve this with greater efficacy than non-BCN cities by incorporating more biophilic indicators in their plans than cities that are not part of the BCN.

When reviewing the results of this study, plans from the four cities incorporate green urbanism to varying degrees. All cities in this study have fairly successful policies and strategies that support the foundational elements of reducing carbon footprints, caring for water sources, and addressing the

need for locally sourced food. However, when comparing cities' approaches through a biophilic lens, this is where the details of the policies, strategies, and plans could have a larger impact. There are three areas in which the cities in this study could improve that would be relevant to many post-industrial cities seeking to grow their populations and economies via a re-imagining process:

Green Economy. The overarching concept throughout the literature is that a green economy improves both the environment and the wellbeing of people (UNDSEASD, n.d.; Larson 2017; Martinez-Fernandez et al, 2010; Bowen et al, 2016). For example, a plan can mention its workforce development and creating jobs, which is a basic goal. However, a

more biophilic approach would be to include details of specific types of green jobs based on existing components or features found in post-industrial cities. Both BCN and non-BCN cities in this study scored lower than anticipated in green job training programs - workforce development. These cities are former industrial complexes. Their history manifests images of laborers, men and women making a new life and new cities. As part of their new image, green industries, along with the accompanying jobs, would be a reasonable transition for post-industrial cities to make. Also with the data showing that poverty rates and unemployment are a concern for de-industrialized places, (US Census Bureau, 2020) transitioning to a green economy is an ideal

opportunity that shrinking cities should be pursuing. These cities must do a better job providing innovative jobs for their communities to revitalize an industrial spirit for the 21st century.

Government Capacity. The capacity to design and implement a policy agenda is an ongoing challenge. To be successful, certain components need to be present, such as resources, the ability to make and carry out governing decisions, and stable partnerships that consist of non-governmental agencies that can leverage private resources (Reckhow, Downey, and Sapotichne, 2020). These elements show a baseline level of government capacity—the “six Cs”: coalition building, citizen involvement, conflict



management, compensation and rewards, cross-unit collaboration, and control (Padovani, Young, and Heichlinger, 2018). However, these components can also act as barriers to the implementation process if they are not enacted carefully. The BCN cities scored noticeably higher than the non-BCN cities in the plan implementation area. With such an obvious difference in this area between the two study groups, further study would be needed to determine if participating in the BCN is a factor in this difference, and what other possible causes might exist for slow or ineffective implementations. Many other areas in this research could have been scored higher if the local government partnered with other agencies or groups to meet the requirements for biophilic urbanism. This is where partnering with the BCN could be beneficial. In addition to partnerships, city governments need to determine if there are elements in place in their current departments that could improve their capacity to meet green urbanistic goals and thus support stronger local government services.

Plan Implementation Gap.

Post-industrial cities are using biophilic urbanism to merge nature and the built environment; however, some cities do this more effectively than others. Legacy cities which are BCN partner cities show more proclivity to include biophilic thinking into their city plans than similar cities that are not part of the network. Ensuring that nature is included in city planning to facilitate the biophilic needs

of people is a way for post-industrial cities to rejuvenate their surroundings and their economy, while meeting federal and state environmental requirements.

The BCN supports localities in achieving better environmental and economic results through improvements in green economy, government capacity, and plan implementation. C.J. van Leeuwen’s research supports the idea that cities can learn from each other and that active exchange of best practices can significantly improve similar efforts of cities (Van Leeuwen, C. J., 2013).

Government policy is the key to making these changes and usually the details of such change are left to individual localities based on a broad outline that is provided by federal and state governments. However, it is the struggling small to mid-sized cities, along with former manufacturing centers, that lack the economic capacity to adopt new frameworks for their economic plans. The development of human resources is the foundation for greening economies; technical training and vocational education at all levels play critical roles in the process of transforming cities.

The future of post-industrial cities relies on the ability to design their city in a way in which people will have a unique experience when visiting or living there. Biophilic urbanism and design would make this happen.

Though my research had its limitations, i.e. small study group, only one evaluator, and relative subjectivity, it does indicate that legacy cities write their comprehensive plans with more attention given to urban greening and biophilia when they are members of the BCN. However, when comparing basic census data for the cities in this study, there is no explicit correlation, but there are inferred benefits such as increases in the workforce, decreases in the number of those living in poverty and using government health care and food benefits. As the BCN grows, more research would support the inferred benefits of becoming a member of the network to meet the sustainability needs of cities.

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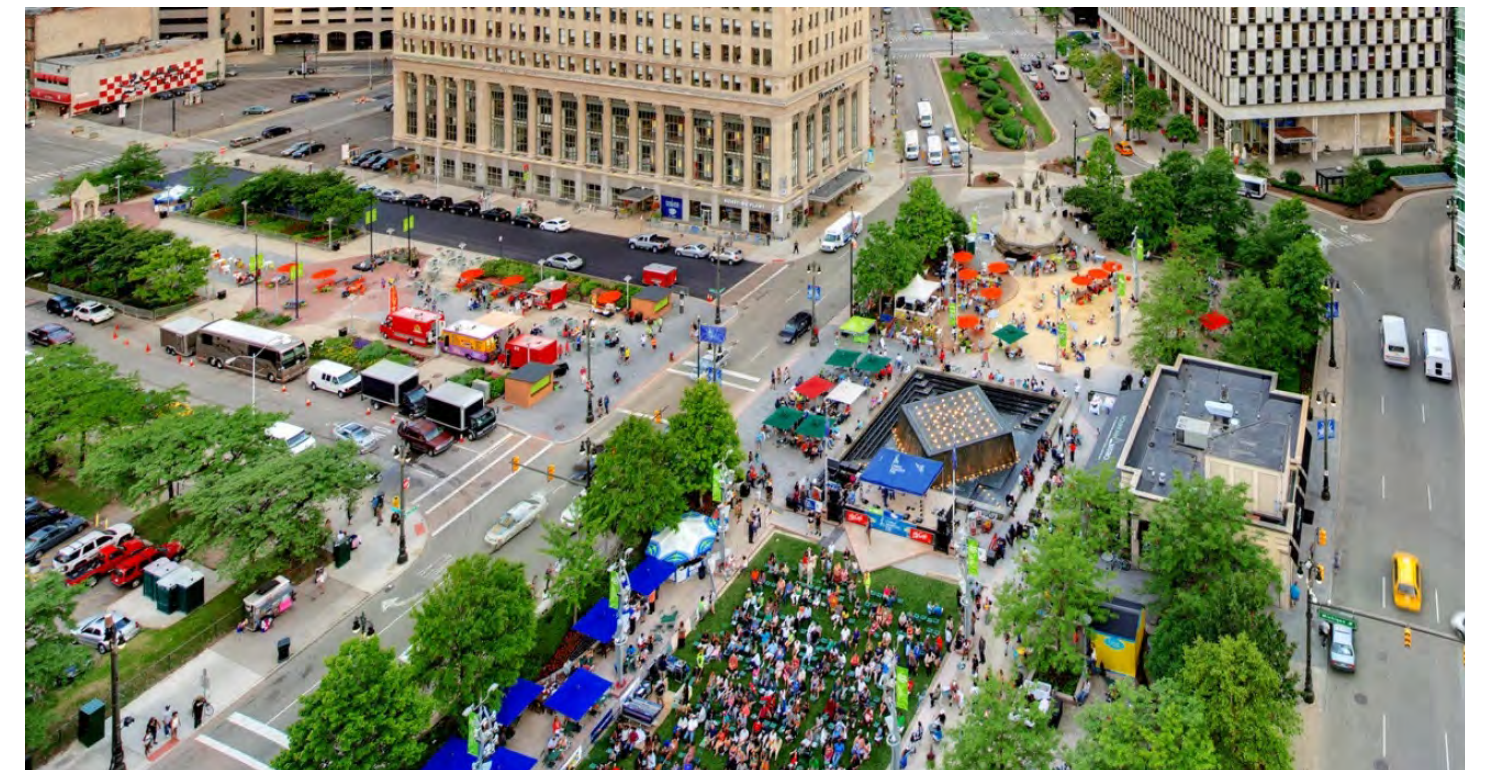
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Below: Campus Martius Park Detroit
Image Credit: Downtown Detroit Partnership





Digital Rendering of the Rock
Image Credit: My Liveable City

Conceiving Parking Garage as Landscape

By Shyam Khandekar

Originally published in *My Liveable City* (January-June 2023)

The growth of Mumbai as the commercial capital of one of the largest emerging economies, namely India, has been made possible by high-density urban developments in the form of residential complexes and work campuses. One of these has been developed on a site just shy of 10 hectares on the land of the defunct Nirlon Yarn factory. In the redevelopment scheme designed by us, we prioritised the urban spaces between the buildings creating an urban landscape of high quality by retaining old trees and planting many new ones. The primacy of the urban

landscape is the backdrop against which the buildings get their ambiance. The belief is that the landscaped spaces between the buildings add value to them.

A dilemma of high-density development is not only to create the buildings and work places for its many occupants but also to somehow accommodate the many car parking spaces, which are vital in a high concentration of workspaces.

To give an idea of the magnitude of this, the Nirlon Knowledge Park, which has been designed

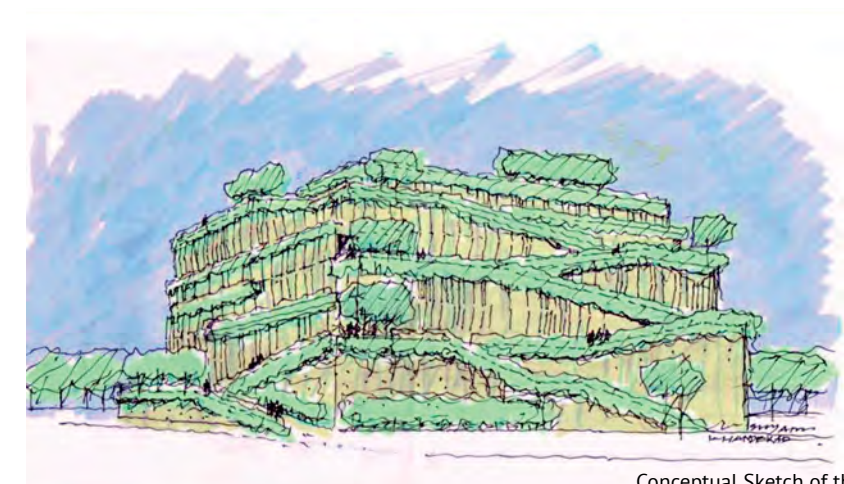
and built over the last 10 years has place for nearly 35,000 employees. In spite of the fact that many employees use various types of public transportation, a large number of car parking spaces had to be built.

Right from the outset, the design philosophy was to create public spaces as an interlinked set of parks exclusively for the use of pedestrians. There was no space allotted for cars and they had to be tucked away safely elsewhere, preferably under the buildings. However, the ability of the campus, which has been built

in five phases, to put away cars in multilayered parking garages beneath the buildings was undermined by the existence of solid rock underground.

In the first four phases of development, a solution was found by building parking garages in large footprints, only partly under the ground and partly above, letting the buildings straddle them and allowing the landscape to climb up the upper layer of the parking garage in the form of a terraced landscape. This helped not only tuck away the parking areas but also created a unique landscape identity with terraces and steps. The level differences thus created afford seating spaces and views of the activity areas.

However, in the fifth and last phase of development the problem was compounded by the fact that not only was the intensity of building higher than the earlier phases but also the rock under the ground was



Conceptual Sketch of the Rock
Credit: Shyam Khandekar

closer to the surface. Blasting the rock in an already high-density campus not being an alternative, it seemed certain that we would have to opt for stack parking above the ground. As the prospect of a massive and stark parking-box loomed, we frantically searched for an alternative to solve the problem without diluting the park-like qualities of the whole campus.

Landscaped rock as an identifiable icon

So, we thought, what if we

conceptualised the above-ground parking garage as a sort of rocky outcrop with trees and other green landscape, which had burst above the ground. And what if we dimensioned this volume in such a way that we could accommodate a significant number of cars within it.

Armed with this design concept, we proceeded to make the first conceptual sketches for the parking garage. In order to avoid any misunderstanding about our intent, from the very first day we aptly gave it the name The Rock.



The presence of landscaped public spaces between the buildings
Image Credit: My Liveable City

To offset the extra costs of this form of a parking garage vis-a-vis a simple box-like structure, it was decided to give this structure extra landscape qualities. The first sketches (shown on the facing page) indicated the form of a rock, which stepped back as it rose up, allowing pedestrians the possibility to walk up the landscaped edifice.

In the first studies that followed, the possibilities of a landscaped object were simultaneously explored while keeping in mind a reasonable efficiency for the parking garage. This was achieved by conceiving the garage as a series of connected ramps with a driving lane in the middle and parking on both sides of the drive. The pedestrian path, placed outside the core parking area, was conceived as a gently climbing slope that stopped intermittently to create viewing platforms.

Having convinced the client-team of the extra value of this structure, the detailing work began. It was at this stage that an architectural engineering consultancy (VA Architects) and a landscape architect (Lanarch Studio) were brought into the design team. Many months of laborious work followed to detail out an element of landscape, which in fact contains 375 cars on eight floors. At the lowest levels it also accommodates some utilities like an electricity generating plant, water tank, etc.

As the design progressed, the path up The Rock was further refined, guided continuously on the outside by broad planters containing bushes and grasses. At strategic moments resting places were introduced for walkers to pause and get a panoramic view of the campus. Pergolas were erected to mark these intermezzos and deep planters



Photo on this page and opposite show the effect of landscaping less than a year after planting. Trees and greenery will grow markedly in the coming years
Image Credits: My Liveable City

introduced at corner locations to plant big trees.

The experience of climbing The Rock is heightened by the creepers, which cover the wire mesh around the main structure. Additionally, for those driving their car into the garage, the wire mesh covered with green creepers creates a surrealistic experience of landscape as viewed from inside the parking garage.

The structure is crowned by a large accommodation on top that can be used as a restaurant or a hall for recreation. The first tenant has decided to use it as a yoga room.

Birds and Bees

The Rock is a unique urban structure which, as the landscape grows on it, will provide a place for birds and bees, insects and butterflies. The choice of plantation will stimulate this. As landscape architect Subhagya Atale puts it, "The use of varied plants in design will also impart ecological benefits to the project. By evolving the planting strategy further, a mutualistic relationship between plants, birds and insects could be developed over a period of time. While food-bearing trees will invite birds, flower-bearing plants will attract butterflies, bees and insects. In turn, these will help plants in pollination, keeping them healthy and free from parasites. Parrots can forage on Tabebuia flowers for nectar. Hummingbirds, Sunbirds and other birds can get nectar from



plants like Nerium, Cannas and Lily. Some birds also feed on insects, ants and wasps around the plants and keep them healthy and free from parasites. Birds and bees that are key pollinators are attracted to flowers due to their colours. These transfer pollen grains between blooms, enabling plants to reproduce. Flower fragrance also attracts butterflies, bees and moths at different times of the day. Plumeria Alba, fragrant at night, attracts moths for pollination. Sparrows and Finch are attracted to the insects, which feed on the Bougainvillea plants."

The process of The Rock's conceptualisation, design and construction shows that, at

moments of difficulty, a creative out-of-the-box solution can provide not only a way out of the dilemma but can lead to an original solution, in this case simultaneously solving an issue of infrastructure as well as enriching the urban ecology and landscape.

Worth mentioning in this matter is the teamwork between the various specialists involved in detailing my design concept by the architectural engineers VA Group and the landscape architect Lanarch Studio. And last, but not least, the willingness of an enlightened client: Nirlon Knowledge Park to undertake this complex project.

Shyam Khandekar is the Founder & Editorial Director of My Liveable City. An architect, urban designer and planner, Shyam has nearly four decades of professional experience designing several prize-winning projects in Europe and India. He has lectured and published extensively on different aspects of Liveable Cities at universities and conferences across the world.

Resources:

Original publication: My Liveable City (January-June 2023). <https://www.myliveablecity.com/issue/detail/urban-ecology>.



The Main Road Access Road in Bengaluru
Image Credit: My Liveable City



Images Corresponding to Map at Left
Image Credits: My Liveable City

Wiggling the Roads and Other Design Strategies to Save Trees

By Shyam Khandekar and Subhagya Atale-Raval

Originally published in *My Liveable City* (January-June 2023)

The importance of trees for us all hardly needs to be elaborated. Our forefathers venerated them and cultures around the world have eaten fruits from their branches, and some have even used trees to build houses. In present times, with climate change writ large, the usefulness of trees to sequester carbon is invaluable. Trees also make cities more liveable by reducing the urban heat-island effect in times when the global temperatures

are set to rise by 1.5 to 2 degrees Celsius.

In spite of this, the pressures of urbanisation, and particularly high-density urbanisation in Indian cities where densities of FSI (Floor Space Index) 3.5 or more are being realised, has meant that trees by the hundreds are being cut to build real-estate and infrastructure.

Yet, in two of our large projects

– one in Bengaluru and another in Vadodara – we have used the following design-strategies to protect a large number of old and many monumental trees, besides planting hundreds of new ones.

Analysis: In both of these projects the design work started with a thorough analysis of the trees on the site (quantity and quality) including the gradient on the site and the contours on

which the trees had grown.

Creating Public Spaces: In the urban-design vision, the location of important trees was a major guiding factor in deciding where to locate the network of public spaces. By assigning the trees to such public spaces, the possibility of retaining them increased. The landscape design of these public spaces further highlighted the presence of these trees.

Locating Infrastructure: The vehicular infrastructure, which uses up large tracts of land and which with its rigid logic of efficient vehicular movement often leads to decimation of many trees, was inspected critically. The intent was not to create straight roads that would

increase vehicular speeds (and then require speed-breakers), but to let the roads wiggle around existing trees and where the roads were multilane, split these up in to smaller lanes and let them snake their way around existing streets. This manoeuvre would help retain many more trees while at the same time reducing the speed of vehicular traffic and increasing the landscape quality of the built environment.

Locating the Buildings: The location of the individual buildings and their footprints too was often decided based on the location of existing trees and, as far as possible, the buildings were placed in spaces between the trees. In some cases, where

the building is located next to a tree with a large canopy, building heights have been restricted, or buildings are stepped back to allow space for the tree-canopies. The urban design scheme is one of buildings which are placed not with a geometric order, but in an organic way around trees. The accompanying drawing on this page shows the intent, as the design evolves.

The drawings and photos included here indicate how using these design strategies can help retain many trees on a site. The illustrations and photos of parts of the site show how remarkable results have been achieved by using these strategies from narrow single-lane roads to broad multilane ones.

A small road only 250 metres long, giving access to a series of cafes and a large office building. The road snakes past existing trees and ends in a roundabout in front of the office building with a couple of large trees of the Ceiba family in the middle of the roundabout.

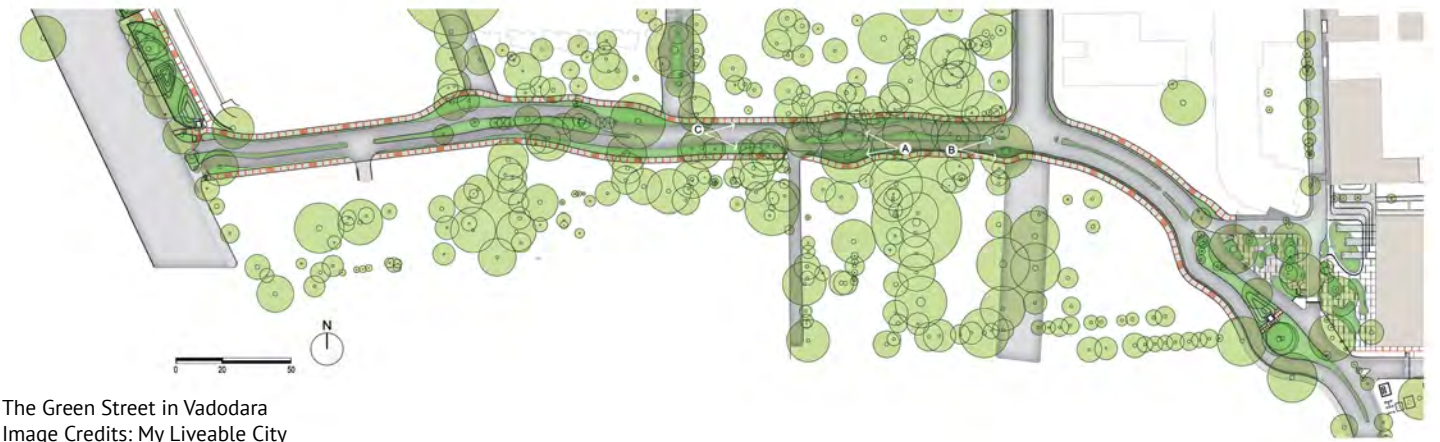
A major road of nearly 500-metre length had to be created through the site. Since this road not only had to cater to heavier traffic but also had to reserve space for

underground services alongside it, we decided to create a median and thereby help accommodate some existing trees there. Locating the pedestrian path at some distance from the vehicular road helped us to retain more trees.

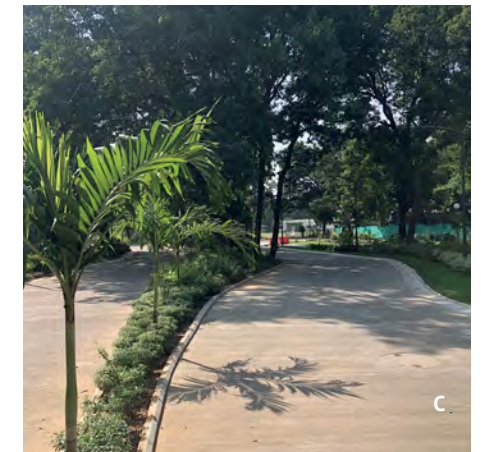
As the main vehicular access road from the west side, this road had to be dimensioned to carry heavy vehicular traffic with 2x3 lanes. However, by placing a median between the two

directions of traffic and also at places splitting the three lanes, more trees could be retained. The biggest hurdle in this design was a magnificent row of rain-trees nearly 25 metres tall, which lay perpendicular to the access road. For this reason, the access road lanes were split up and laid at different grades, so that the road could cut across the row of trees without having to cut a single tree.

The Service Road in Vadodara
Image Credits: My Liveable City



The Green Street in Vadodara
Image Credits: My Liveable City



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Resources:

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Above: Beaver dam
All Images from Emily Fairfax

Smokey the Beaver Comes to the City

By Tim Beatley

I have always loved beavers and have fond recollections of watching them as a child. A favorite object that I have carried with me from house to house over the years is a three-foot long segment of a tree chewed nearly, but not quite, in half. It is what beaver biologists call a chew-stick (perhaps chew-log in this case), and it has always amazed me.

Beavers are experiencing renewed interest among ecologists and land managers, but also among the general public, as we begin to understand

(or rediscover) the many positive ways that they influence the landscape. When Europeans arrived, there were an estimated 100 to 400 million beavers in North America. Largely because of demands for furs and resultant trapping during the first half of the 19th century, beaver populations reached a shockingly low number, around 100,000, and came close to extinction. Today, beaver numbers have rebounded and estimates put them in the 10 to 40 million range, though this is still only 10% of pre-trapping levels.

Emily Fairfax, who teaches at Cal State Channel Islands, is one of those scientists whose work has been helping to change our perception of beavers, especially through her documentation of the role that these natural engineers play in mitigating drought, flooding, and especially wildfire. In 2020, she published with colleague Andrew Whittle the wonderfully titled article "[Smokey the Beaver](#)," which is an apt moniker to describe their findings: that beaver dams and the flooded watery environs that they create provide remarkable protection against wildfires.

I recently discussed these findings with Fairfax who explained that, while others had observed this phenomenon, no one had really studied it or documented it in any scientific or systematic way. She was quite surprised by what they found and the extent of fire protection afforded by beaver ponds and wetlands: "I was expecting to see more burning," she told me. "Like the fire pushing into these zones and then maybe petering out a little bit more." What she found was a greater ability to stop or redirect the fire, and she found it consistently across her sample. "As soon as the fire got to the edge of these complexes it was like night and day, like it stopped." The result: "huge patches of landscape were intact," an encouraging finding, she told me; "a nice bit of hope,"

in otherwise discouraging times.

Cleverly, Fairfax has communicated the essence of her findings in a wonderful [homemade animation](#). She tells me the inspiration for this grew from her time on the job hunt, where she was constantly being asked to give her elevator speech. She'd usually want to search for some photos or pull out a book, but came to the animation idea as a more effective answer. She found a stop-motion app and made the short, animated film herself.

Land managers are taking notice of this work, she tells me, and the tide seems to be turning in favor of beavers. For example, California has just funded a major new beaver conservation and restoration program. The

beaver solution is a relatively cheap and easy one; something she's now seeing "a ton of enthusiasm for." It is cheap and doesn't need humans to do very much at all. "In fact, the biggest effort is leaving the beavers alone so they can do their job."

Especially important is that these beaver-created riparian oases will provide important refugia for many other species, including birds and small mammals that are already incredibly stressed by climate change. "These ribbons of fire-resistant riparian corridor may be particularly important for species that are unable to physically escape fire," she and her co-author write in the conclusions to their "Smokey the Beaver" article.

Beaver engineering is also

Below: Screenshot from "Beavers and Wildfire" animation by Emily Fairfax
[Link to Animation](#)



important in addressing conditions of drought and in managing flooding by creating deep ponds and expansive wetlands that retain stormwater and help to recharge groundwater. There is some evidence that beaver ponds do an especially effective job of controlling and treating toxic runoff, a result in part of the unique microbial conditions found there. Fairfax specifically mentioned the positive role of beaver ponds in capturing the ash left from wildfires and moderating the water contamination that typically occurs as the ash runs downstream.

I asked Fairfax about the role of beavers in cities. There has been a history of seeing them as a nuisance when in close proximity to people and development, where dams can lead to flooded roads and the loss of trees. Coexistence, Fairfax tells me, is possible and there are now more tools and coexistence best practices to draw upon. Pond levelers (that go by trademarked names like “beaver deceiver”) are one tool that permit land managers to reduce the height of dam ponds to avoid inundation of roads and development, and there are tried and true ways to protect trees, including through the use of wire guards. Fairfax tells me about how favorite trees of beavers to fell and chew, such as Cottonwoods and Willows, have developed defenses against the beavers. For example, once a tree such as a Willow is felled its shoots are bitter to the taste and beavers will avoid eating them. Trees like Willows and

Aspens, moreover, are species that clone, so that when beavers use their sticks or branches they are essentially planting the next generation of these trees. In these ways, beavers and trees have coexisted for 20 million years, she tells me.

Cities like Denver and Seattle are now actively making room for beavers and having considerable success at coexistence. Seattle can now boast the largest urban population of beavers in North America. Coexistence there means thinking ahead: protecting trees proactively. “The result is that the city is full of beavers,” says Fairfax and “nobody thinks it’s weird to see beavers swimming down the canals.”

Relocation of beavers is possible, though increasingly seen as a last resort. Much can be done to ensure successful relocation where justified, including relocation of entire beaver families. Efforts also include creating beaver dam analogues, which are human-made structures that mimic beaver dams and give the beavers a head-start. One of the most intriguing historical examples of an oddly successful relocation effort occurred in the late 1940’s when Idaho and California beavers were placed in boxes and air-dropped by parachute into backcountry locations. No one today is suggesting a return to that technique, but there is growing recognition that many landscapes would benefit from the reintroduction of beavers.

There is also growing evidence about the extent to which urban

residents enjoy the presence of beavers and actively seek them out. Fairfax mentions many examples, like a town in the UK where recreational beaver watching has become an economic engine. Or the [story of beavers near Logan, Utah](#), where every night families show up to watch the beavers. Fairfax herself enjoys leading nature walks to see beavers and is pleased to see the ways in which people look forward to a beaver sighting. “It’s so much suspense,” she says, as people enjoy reading the landscape, looking for clues such as chew-sticks, until they finally see a beaver. “People get so into it...Everyone’s cheering for the beaver to come out.”

Some of the strongest supporters of returning beavers to their rightful place in the ecological community are Native Americans. The Yurok, Tule River, and Maidu tribes of northern California, especially, but also the Yakima and Cowlitz tribes of Oregon and the Tulalip of Washington, are all working to restore beaver populations, which is also seen as an important step towards restoring salmon as well. Beavers have a special significance to these tribes, as Frankie Myers of the Yurok tribe speaks about in a wonderful recent episode from the [How to Save a Planet podcast](#) (that Emily Fairfax participated in and alerted me to). Beavers have always been seen as members of the community, Myers notes, and humans and beavers have coexisted together for thousands of years. I like this more expansive idea of a community that includes beavers, an idea well-suited for the times and for

the urban era where citizenship in cities must extend well beyond humans.

Fairfax’s current research focuses on developing a model that will help better understand (how many and where) beavers can maximize fire protection, as well as understanding through historical records what stream ecology looked like prior to European trapping. Her hunch is that pre-European landscapes, with a very dense population of beavers, looked quite different from today (likely much more verdant and biodiverse).

Cities would be wise to enlist beavers in helping restore our damaged urban ecosystems. They will help deliver a needed dose of wonder and fascination as well. For this “beaver believer”,

I am going to go looking for my chew-log, and place it in a prominent spot, in the hopes that it will remind me of the time spent watching these endearing critters.

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Image Credit: Chungnam Wild Animal Rescue Center

Open Eyes to Birds' Sorrow Emerging Protections for Birds in South Korea

By Soop Kim

In September 2020, a photo exhibition was held to celebrate the 10th anniversary of Chungnam Wildlife Rescue Center (CWRC) in Yongsan-gu, Seoul. The exhibition's title was "Did we meet before?" There were carcasses and pictures of birds who were injured by various obstacles: a Vinous-Throated Parrotbill that had been killed by a window strike; an Eurasian Sparrowhawk whose feet had been entangled with disused nets; a Common Kestrel that had been stuck in flypaper; an Eurasian Eagle Owl that has been hit by a car; and the list

went on. Audiences could see wildlife that had suffered from obstacles that we made. It was not a large-scale exhibition, but it was the first one in South Korea that showed the effects of man-made structures. Since 2010, CWRC has been rescuing wildlife and educating citizens who are interested in wildlife and their survival.

It was in the 2000s that people started to pay attention to the difficulties experienced by birds. One of the first studies about birds' troubles in South Korea was the "Research on Habitat

Improvement for Migratory Birds" conducted in Hong-do in 2008 and 2009. Hong-do is an island in the middle of the east Asian-Australasian flyway. According to this study, the number of bird fatalities in Hong-do was 416 (the size of the island is only 247 acres). 73% of the total accidents occurred between March and May, when the most birds migrate, and the second most common cause of accidents was collision with artificial structures. Seoul National University undertook another early study related to bird fatalities on its campus. They found that

from 2007 to 2011, 196 birds representing 33 species suffered from window strikes on campus. While the studies on window strikes gradually accumulated, the national government's Cultural Heritage Administration started making "Bird Saver." In 2009, Bird Saver was a simple black sticker that looked like a raptor. Bird Saver stickers were attached to various buildings and glass walls for several years in an effort to decrease window strikes, but a subsequent study found that these stickers were not effective. Instead, the study found that stickers attached at a small distance from window surfaces (5cm to 10cm) would enable birds to better recognize the glass and prevent window strikes. Based on this study, an effort has been made to revise the way to prevent window strikes.

In 2018, wide-spread research about window strikes began throughout South Korea. With the [Naturing app](#), anyone with a cellphone can participate. You can take pictures of the birds injured by the window strikes and upload them to Naturing. So far, more than 34,000 birds have been recorded in Naturing! There is one rule when you take pictures of the bird killed by window strike: take a picture with a card named "Save the Birds." The Ministry of Environment and the National Institute of Ecology (NIE) made the card (images to the left). On one side, there is a ruler that can measure the birds' size; while on the other there is a color chart that can initialize the color variation depending on the camera. In 2021, a brochure

named "[Guidelines for Citizen Participation in Investigation of Wild Birds Window Strikes](#)" was published by NIE. It includes details of what to do when you find birds who have struck a window. Plus, anyone can download it from the NIE.

In addition, a group named Windowstrike in Ewha has consistently recorded window collisions occurring on the Ewha Women's University campus since 2019. A large number of window collisions have occurred at a building called the Ewha Campus Complex (ECC) because the side of the building is designed with glass and greenery on the

roof. Many birds who came to rest in the rooftop foliage often collided with the glass windows, particularly younger birds. The students insisted that the school should take action related to the windows, but the school didn't budge an inch because it would modify the appearance of the building, which was mainly design by the well-known French architecture Dominique Perrault. Still, many people are raising their voices for birds, and many articles about ECC's window strike have been published.

In early 2022, people's interest in window strikes increased when Tim Beatley's *The Bird-Friendly*



City was published in Korean. In addition, a lecture on window strikes was held to celebrate the publication of the book detailing the difficulties birds may face in cities, including window strikes. The course was delivered by Young-Jun Kim, Director of the Division of Zoological Research and Management at NIE, who has worked hard to communicate the consequences of window strikes for a long time. The lecture video was runs two hours but has recorded more than 3,000 views!

Thanks to the increased interest, the Bird Collision Prevention Act passed the plenary session of the National Assembly on May 29, 2022. This bill requires public buildings to be equipped with artificial structures to minimize harm to wild birds. There is still a long way to go as the Act only regulates public buildings. However, it is a meaningful step

in the effort to prevent window strikes.

Recently, various new media focusing on birds is pouring in. Youtube channels record birding, journals highlight birdwatching, and new documentaries focus on birds, etc. Each movement seems minor, but these movements can come together to create one big step. In the past 20 years, we have made a slow but significant step forward. As more and more people are interested in birds, I look forward to the next 20 years as those who care for birds keep increasing!

Soop Kim is the Korean language translator of Tim Beatley's The Bird-Friendly City and Gabe Brown's Dirt to Soil. Kim is a graduate of the Korea Institute of Science and Technology (KIST).

Resources:

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Above: The first-place team took home this Hampton Roads Datathon Championship Belt and bragging rights until next year, when the belt will be awarded to the next team that places first.

City of Norfolk Hosts Inaugural Hampton Roads Datathon

By Natasha Singh-Miller; PhD

Overview

The City of Norfolk’s CivicLab hosted the inaugural Hampton Roads Datathon on September 16, 2022, with the theme “Analyzing, Promoting, and Protecting Biodiversity in Hampton Roads.” Hampton Roads is a tidewater region of southeastern Virginia and home to more than 1.5 million people. The goal of the datathon was three-fold: bringing together data minded individuals, city staff and other community members;

demonstrating the value of the large amount of data available to us; and facilitating data sharing in the region. While the datathon only lasted one week, CivicLab staff were astonished by the level of participation, enthusiasm for the theme, and the potential impact of the projects demonstrated by the 16 teams that participated.

The success of this datathon was due in large part to overlap in scope with the operations of Norfolk’s CivicLab, whose mission

is to increase transparency and use of data citywide in decision making. Because leadership support was already in place for promoting the use of data and improving our natural environment, we were able to host this event with minimal additional investment. Our team brought together an extensive listing of public data from cities in our region, state and federal agencies, private organizations, and historical documents. The participating teams used these and other sources to create a

surprisingly diverse assortment of projects. The projects were judged by Biophilic Cities Founder Tim Beatley, Virginia’s Chief Data Officer Ken Pfiel, and City of Norfolk Resilience Officer Kyle Spencer. Projects were evaluated based on their use of data, adherence to the theme, and usefulness to the community.

The Projects

Participating teams were comprised of students from regional colleges and universities, local governments employees, concerned citizens, data enthusiasts, and even students from a local middle school.

First place went to the Hampton Roads Planning District Commission who studied [the impact of sea-level rise on](#)

[conserved lands in our low-lying coastal region](#). Based on anticipated levels of sea-level rise, they were able to predict the impact on the amount of land, tree canopy, and public water access sites that currently support diverse habitats for local wildlife. They demonstrated their work through interactive maps and other data visualizations.

The second-place winners were from the City of Virginia Beach’s “Collaborators for Canopies and Pollinators” team. They created [a dashboard to compute and display key performance indicators for biodiversity in their city including tree canopy and species counts](#). They organized the information by different voting districts in the city to help focus conservation efforts.

The third-place winners were

from Old Dominion University (ODU) and studied [the wetlands in Hampton Roads to understand how many were in protected lands](#). They conducted an analysis to identify areas where conservation and restoration efforts may be most beneficial. They built a story map detailing their work.

Another ODU team mapped Norfolk’s tree planting and significant tree data, using datasets in our Open Data Portal, to analyze tree distributions throughout the city and ran simulations to understand how much shade Norfolk’s current tree canopy provides to pedestrians. A team from Virginia Wesleyan University created a site to analyze and display data regarding invasive ant species in the region. Other projects looked at fish health

Below: The team representing the Hampton Roads Planning District Commission won first place with their project “Drowning Nature,” an analysis of the impact of sea level rise on biodiversity in Hampton Roads.



in local waterways, changes in native bird populations, patterns in animal strandings, methods for attracting pollinators, and analysis of sales listings of species considered invasive to Virginia on large websites like Amazon, among many others.

Future Plans

CivicLab plans to make the Hampton Roads Datathon an annual event with the topic changing from year to year. Biodiversity was a moving and motivating topic that helped us get fantastic participation in this first ever regional effort. Some of our participants plan to continue research on their projects as well, with local agencies leveraging some of the work.

Dr. Natasha Singh-Miller is a data scientist with the city of Norfolk, VA.

Opposite: Dr. Tim Beatley, Founder and Executive Director of Biophilic Cities, delivered the keynote address and served as a judge at the Datathon.

Below: Old Dominion University was represented by multiple teams at the Datathon. The University's Wetlands team won second place with their project called Wetlands and Protected Areas in Hampton Roads that analyzed wetland conservation.



Resources:

Hampton Roads Datathon Story: <https://data.norfolk.gov/stories/s/wk4d-6jxs>.

Hampton Roads Datathon Dataset Listing: <https://data.norfolk.gov/stories/s/9ri5-nws2>.

City of Norfolk's Biophilic Cities Profile: <https://www.biophiliccities.org/norfolk>.

KC Filippino and Sara Kidd. 2022. "Team HRPDC Places First in the Inaugural Hampton Roads Datathon". *Hampton Roads Planning District Commission*. <https://www.hrpdcva.gov/news/article/october/11/2022/team-hrpdc-places-first-in-the-inaugural-hampton-roads-datathon>.

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Joe Garvey. 2022. "ODU Students Place Third at Inaugural Hampton Roads Datathon". Old Dominion University. <https://www.odu.edu/article/odu-grad-students-place-third-at-inaugural-hampton-roads-datathon>.

Sara Kidd, John Harbin, Ben McFarlane, Jill Sunderland, Grace Hansen, and KC Filippino. 2022. "Drowning Nature: How Sea-level Rise Will Impact Hampton Roads Biodiversity. ARC GIS Project. <https://experience.arcgis.com>.



Pittsburgh: A City of Steps

By Tim Beatley

On a Saturday in early November of 2022, the Garden Club of Allegheny organized a day-long symposium to highlight the City of Pittsburgh’s unique network of city steps that connect many neighborhoods in this hilly city. There are more than 800 sets of steps in the city, though there is some disagreement about the precise number, and even how best to count them. Many are in disrepair, and the symposium was, in part, about brainstorming about the future of these steps. I was able to attend the symposium but also was able to visit and film a number of the steps the following day leading to a production of a

[short documentary film about the steps.](#)

Having so many outdoor steps and stairs is an understandable result of the challenging topography of Pittsburgh. Many workers used these steps as essential routes for walking to their jobs in the factories and steel mills situated along the banks of the city’s rivers. Today, they still provide essential pedestrian connections for many steep neighborhoods and taken together amount to a remarkable set of assets that contribute mightily to this city’s sense of place and (especially from my perspective) for providing access

to outdoor nature.

Angie Martinez, Assistant Director of the city’s Department of Mobility & Infrastructure (DOMI), opened the symposium with an overview of the city steps, how important they are in the city, and efforts to plan for their maintenance and improvement. In 2018, the city undertook a comprehensive [Steps Assessment](#) that gave every set of steps an overall step score that took into account a walkshed component (proximity to shops, employment) as well as a social equity component. The result was a priority list of some 58 steps needing upgrades at a cost of

\$15 million. Of these, the city has already moved forward on 12. As Martinez and others during the day made clear, these steps are both cultural assets and an important part of the pedestrian and mobility network of the city. The diversity of step designs and different kinds of steps is impressive. Some follow an adjacent road, essentially serving as a kind of alternative form of steep sidewalk (referred to as “jumper walks”). Others are simple straight structures while others are elaborate switch-back designs, some quite complex and often rising many feet off the ground. Some of the steps end up serving a single home, delivering a walker to the back yard or to the side door of a home. Most of the steps are concrete and metal, but some are made of wood.

mosaic design to be affixed to the steps and risers. She led a group of volunteers in making and installing the art, with much of it paid for through a go-fund-me campaign. The result is a beautiful piece of vertical public art. To fully see and enjoy the creation requires walking up the steps.

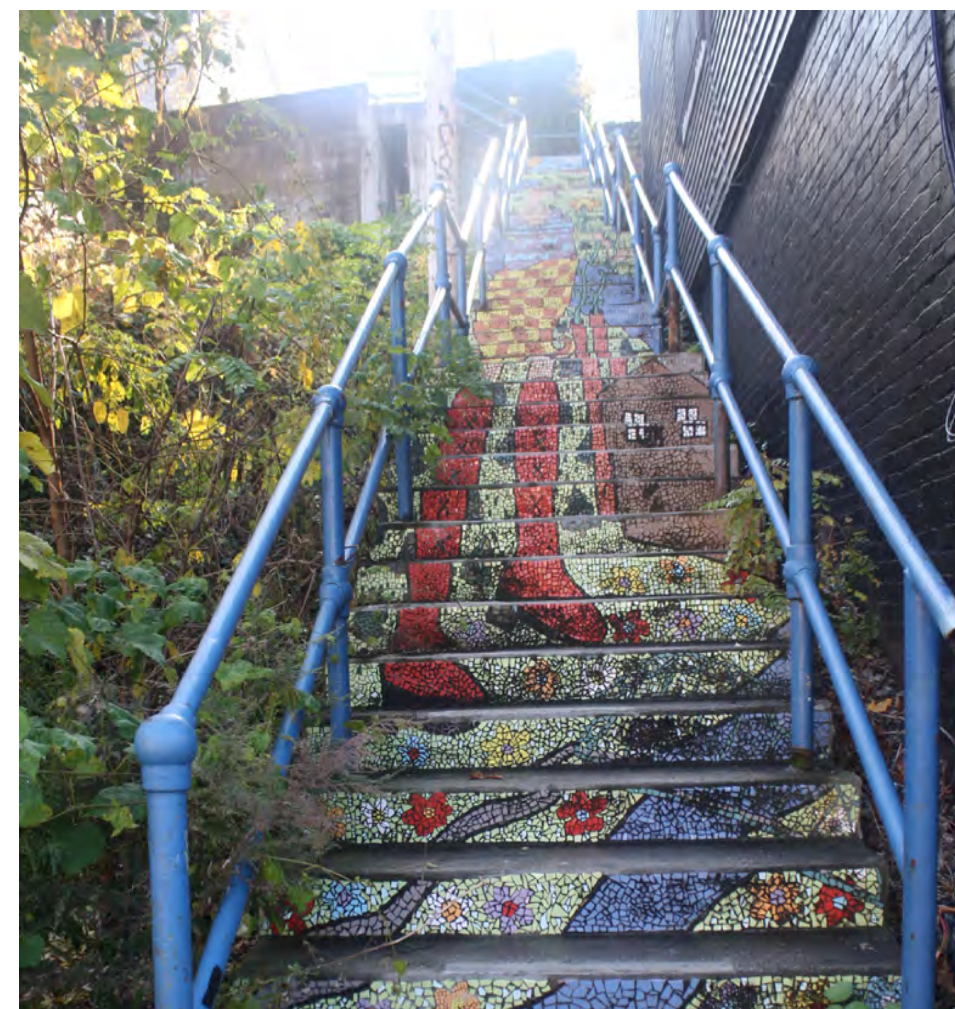
On an overcast Sunday, the three co-chairs of the Garden Club city steps initiative – Eliza Brown, Christina Schmidlapp, and Sarah Drake – led me on a wonderful multi-hour tour, accompanied by a filmmaker colleague who had flown in from Colorado the night before. Over the course of the day, we visited and filmed steps in several different neighborhoods.

One memorable stop was the Vista Street steps (photo on page 45), in the East Allegheny neighborhood, newly reconstructed and with another impressive mosaic. Assistant Director Martinez met us there and we filmed an interview walking up the steps. She explained for the camera the historical elements of the mosaic, including the 16th street bridge, a social club, and a trolley (though the trolley is now gone, the trolley tracks are still visible in the streets). Martinez described how important city steps, like this one, are to her personally, and the “urban hiking” the steps allow and encourage.

The city steps can also themselves be destinations and

Other cities have steps and stairs, to be sure, but not as many as Pittsburgh. They are found throughout the city, in just about every neighborhood. They are also in many cases remarkable engineering and construction feats, as Angie Martinez told us in her presentation. It is common in other cities to build steps on grade, but in Pittsburgh they are often up in the air, perched on elaborate vertical pilings.

The city steps are also a venue for public art and are themselves a form of public art. Several of the steps incorporate beautiful and quite elaborate mosaic creations. One of the best examples is the Oakley Street Steps (photo at right) in the South Side Slopes neighborhood. Here local artist Laura Jean McLaughlin created a remarkable



can serve as important gathering spaces for a neighborhood. On our Sunday filming tour, we found one family picnicking on the flat section of a step. On my scouting walk the day before, I discovered a small, leveled space adjacent to the steps, with a bench available to sit on and catch one's breath or to contemplate the elevation. The attraction of sitting on this bench highlights another benefit of climbing the steps: the unusual and often dramatic vantage point provided there. The views of the city are quite spectacular and the panoramic points of view are otherwise difficult to find in other places. Perhaps it is important to provide spots in a city where residents

can see all or most of the city, as a way to see one's city in a more holistic way. They also provide moments of discovery and surprise. When seeing such expansive and enveloping views, "wow" is a common utterance when reaching the top.

There has been abundant and quite creative programming for the steps in the last few years. The city has funded much of this through its ["Steps We Take" event series](#), which is a collaboration between Bikes Pittsburgh and the Office of Public Art. In the Polish Hill neighborhood alone, these inventive efforts have included "vertical block parties" (at least one involving a local

marching band), self-guided tours, a vertical pierogi party (a pierogi is a kind of Polish boiled dumpling), and even the design and construction of specialized furniture to fit the city steps. These efforts have collectively helped to promote the idea of the steps as destinations, as stages for performances, and as neighborhood gathering spaces.

One of the most impressive set of steps we filmed that day was in the Spring Garden neighborhood. Here the steps, with several elevated switchbacks, took pedestrians up and over the rocky face of a large hill. This forested cliff edge to me seemed a remarkable remnant of what

the nature and geology of Pittsburgh must have been like in an earlier time. The steps were a striking bit of neighborhood-scale engineering. While filming about halfway up these stairs, we encountered a pedestrian on her way to a Sunday brunch, carrying a bag of fresh bagels. She didn't mind being interviewed and spoke glowingly of the value of the city steps. She explained that the steps were a shortcut for her, a way of getting some exercise but also a bit of a challenge. I asked about the value of the city steps and the benefits of experiencing nature. "I think it's a chance to have a little bit of an excursion into nature without committing to a full-on hike," she

explained. "It's kind of this in-between little gift the city ends up providing."

The nature of Pittsburgh, again due mostly to its topography, is highly fragmented. Even as one is spending time even in the center of the city, it is possible to see trees and forested hilltops and hillsides. The steps are one unique way to access this nature, and many of the steps offer an experience of walking up or down while surrounded by trees and greenery. The spaces around the steps, while usually not large, are nonetheless significant natural areas, though in many places nonnative plants and invasive vegetation have

taken over. How to control these invasives, while growing back a native forest, is a challenge but also an exciting opportunity. It's an opportunity to involve and engage residents but also to explore new approaches, such as the use of goats. Friends of the South Side Park recently hired a local company called Allegheny Goatscape to eat away at the invasives, which they do quite effectively (the company employs four teams of goats throughout the city complete with a "guard donkey" to protect the herds from coyotes)!

Interestingly, the natureful elements I find so appealing are also points of concern for





some residents. In a survey administered as part of the city's planning effort, step users cited overgrown vegetation as one thing that they were worried about and might impede use of the steps. There is also a fair amount of garbage to be found around some of the steps and dumping on these sites does take place. Cleaning up and controlling the trash problem is another aspect of what will make the steps attractive and beneficial. As one astute symposium attendee noted, it is

hard for a visitor to experience a feeling of awe or wonder or connection to nature when there are piles of trash in sight.

Another key challenge for the city is how to maintain the network while planning and undertaking repairs to keep the steps safe for pedestrians. When there is broken concrete or missing steps the city is quick to close the steps. A number of the steps are in some level of disrepair. Renovating or rebuilding city steps is not inexpensive and

limited funding remains an obstacle in Pittsburgh as it does in every city. Some recent projects have cost as much as \$1 million. Figuring out the long-term funding solution remains a challenge and some have suggested the creation of a steps entity perhaps modeled after the successful nonprofit Pittsburgh Parks Conservancy (which is funded in part through a parks tax but also through private philanthropy).

Towards the end of the day, the symposium discussion turned to the longer-term vision for the steps. What do residents want to see it become? Moving from individual steps that serve a single neighborhood to a connected network is one important idea that attendees embraced. Other open questions include how to respect the expressions of the uniqueness of neighborhoods in their steps while also working towards a more coherent citywide system of steps. There could be some common signage or logo, for instance such as developed in cities like Montreal's green streets or "Allées Vertes". There could be pre-established routes through the city, perhaps depending on what kinds of experiences one wants to have and how far one wants to hike. The steps could be the basis for new forms of tourism in the city, as is the case in San Francisco, a city with a similar steep topography and network of public stairs.

My garden club hosts deserve much credit for generating new interest and enthusiasm around

the steps. Their initiative is a valuable contribution to the ongoing debate about their future as well as providing further strong support for their preservation and improvement. Their initiative will continue its work, with plans to organize a design charrette in 2023, and to produce a kind of field guide to the steps. "What we bring to the mix is the notion of a citywide green pedestrian network that incorporates as many of these steps as possible," Eliza Brown tells me. "That notion of a system that spreads through the city is something that hasn't been talked about." Understanding the city steps as an integrated

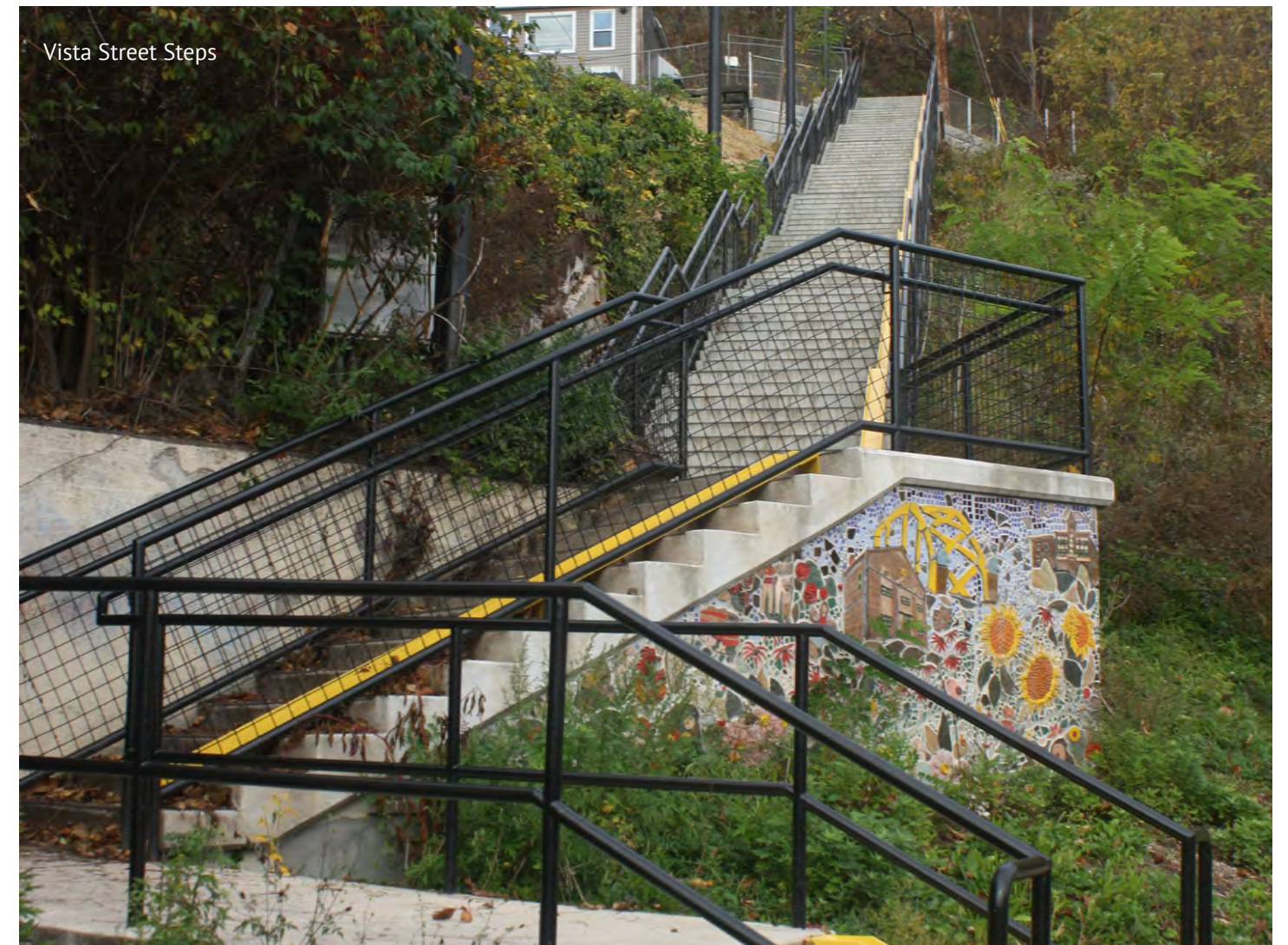
network, as a unique way to explore the city and to fully experience its special nature, definitely helps Pittsburgh realize its potential as a partner in the Biophilic Cities Network. Investing in these unique steps is a tremendous gift, as that Spring Hill "step-climber" (somehow a more fitting word to use than pedestrian) so rightly observed.

Resources

Biophilic Cities. "Pittsburgh City Steps." [film]. <https://www.biophiliccities.org/pittsburgh-city-steps>.

City of Pittsburgh. "Pittsburgh Citywide Steps Assessment". <https://pittsburghpa.gov/citysteps>.

Bike PGH! Steps We Take. Pittsburgh City Steps Events Series. <https://bikepgh.org/sites/steps-we-take>.





Indicators of a Biophilic City

By JD Brown

When Tim Beatley first explored the specific focus of the biophilic city, he identified that the qualities of the biophilic city extend beyond the physical abundance of nature and its accessibility to also include a consideration of the undertakings and ecoliteracy of the people of the city, along with a demonstration of the city's commitment to nature through its laws, planning, and budget ([Beatley 2011](#)).

Using those thoughts as a foundation, the Biophilic Cities Network asks its partners to each identify and monitor its own set of indicators within the context of five broad categories:

1. Natural conditions, qualities, and infrastructure
2. Biophilic engagement, participation, activities, and knowledge
3. Biophilic institutions, planning, and governance
4. Human health and well-being
5. Measures uniquely related to the culture and conditions of the city

Partner cities use selected indicators to assess changing biophilic conditions and evaluate progress over time toward the city's stated biophilic aspirations.

The result is a broad and growing library of indicators of the quality and quantity of biophilic conditions within cities

(Table A). Often the indicators adopted by a partner city are already established through the city's plans and programs and reflect the city's planning priorities. An important starting point is a baseline assessment of biophilic conditions as a prerequisite for a city to chart progress. A variety of tools are available to aid cities in this baseline assessment (Table B). Network partner, the National Parks Board of Singapore (NParks), in partnership with the Secretariat of the Convention on Biological Diversity and the Global Partnership on Local and Subnational Action for Biodiversity, has designed a model index that communicates the dynamic conditions of urban

TABLE A: BIOPHILIC CITY INDICATORS

Category	Sub-Category	Indicator
Natural Conditions, Qualities, and Infrastructure	Land	Trails and greenways (linear miles and square acreage)
		Natural areas protected (total acres, percent of city)
		Parks (number and total acres)
		Community gardens (number and total acres)
		Vacant land incorporating green infrastructure (acres)
	Urban Forest	Percent canopy coverage
		Total number of trees
		Street tree species diversity (size class distribution)
Proximity	Percent of city population living (or working) within 1/4 mile of accessible park or other nature space	
Green Roof and Walls	Green roofs, green walls, and other vertical nature (number and total acres)	
Native Habitat	Native habitat (total acres, percent of city)	
	National Wildlife Federation Certified Wildlife Habitat (number and total acres)	
	Native plant community restoration activities, e.g., wetland or wildlife corridor restoration (number and total acres)	
Urban Biodiversity	Removal of invasive species (acres)	
	Pollinator nest boxes (number)	
Water	Wildlife passage creation or restored connectivity (number of passages and acres or linear miles of restored connectivity)	
	Annual wildlife counts	
	Percentage change in biodiversity (including native species, lichens, plants, birds, butterflies, bats, and bees)	
	Stream restoration projects (number, linear miles, acres)	
Human Health and Well-Being	Time spent outside	Stream daylighting (number, linear miles)
		Nature-based stormwater mitigation projects (number, acres)
Human Health and Well-Being	Equitable nature	Wetland and shoreline restoration ((number, linear miles, acres)
		Percent of city population spending at least 30 minutes a day outside
		Percent of schools where children have daily access to nature
Human Health and Well-Being	Equitable nature	Households within a 10-minute (half-mile) walk of a park or nature space (number and percent)
		Communities or residents that lack access to park or natural area (population, census tracts)
		Percent tree canopy coverage by neighborhood
Human Health and Well-Being	Equitable nature	Demographics of community members visiting nature spaces and participating in nature-based programs compared to the demographics of nearby communities and the city as a whole

biodiversity. The Singapore Index on Cities' Biodiversity, also referred to as the City Biodiversity Index (CBI), is a self-assessment tool for cities to evaluate and monitor the progress of their biodiversity conservation efforts against their own individual baselines. The CBI measures existing biodiversity in terms of species counts, acreage of protected habitat, and connectivity. However, it also includes measures that look beyond the quantitative counts of species numbers and habitat acreage to the larger question of co-existence between humans and nonhumans in the urban landscape. These indicators

examine the broad applications of ecosystem services that nature in the city can provide, such as contributions to health and well-being through the proximity and accessibility of parks. This is a reflection of the diversity of aspirations at play in the biophilic cities vision. One of the newest Biophilic Cities Network partner cities, the City of Los Angeles, applied the CBI in 2018 as a first step in a multi-year effort to develop its own, customized [LA City Biodiversity Index](#). The international community is collectively prioritizing the conservation and restoration of

nature in cities over time as a critical measure of sustainability. Sustainable Development Goal 11 provides an overarching goal whereby cities can look to integrate nature to prioritize public health, equity, and climate resiliency. More recently, in the specific context of global biodiversity conservation, the Kunming-Montreal Global Biodiversity Framework includes a specific target (Target 12) to “significantly increase the area and quality and connectivity of, access to, and benefits from green and blue spaces in urban and densely populated areas ...” as a means to enhance native biodiversity and ecological

TABLE B: BIOPHILIC CONDITIONS ASSESSMENT TOOLS

Tool (linked)	Description
EJScreen	U.S. EPA environmental justice mapping and screening tool that combines environmental and demographic indicators.
EnviroAtlas	An evolving interactive web-based platform created by the U.S. EPA that provides geospatial data, tools, and other resources related to ecosystem services and human health.
i-Tree	A suite of free tools developed by the U.S. Forest Service and partners that aid in easily quantifying the benefits of trees, including canopy coverage, local urban forest structure and values, carbon sequestration, water management, and air quality.
NatureScore	A tool from technology company NatureQuant that measures the amount and quality of natural elements using data sources that include satellite infrared measurements, GIS and land classifications, park data and features, tree canopies, air, noise and light pollutions, and computer vision elements (aerial and street images).
ParkScore	Trust for Public Land index that measures U.S. park systems according to five categories: access, investment, amenities, acreage, and equity.
Singapore Index on Cities' Biodiversity	Also called the City Biodiversity Index or the Singapore Index, this self-assessment tool helps cities evaluate and monitor the progress of their biodiversity conservation efforts against their own individual baselines.
Tree Equity Score	A tool developed by American Forests to measure the equitable distribution of trees across cities.
Urban Biodiversity Inventory Framework	Developed by a partnership of U.S. cities, this tool provides a methodology to assess, monitor, and guide planning of urban biodiversity.

TABLE A: BIOPHILIC CITY INDICATORS (Continued)

Category	Sub-Category	Indicator
Community Engagement and Knowledge	Engagement	Community BioBlitzes (number of events) Participation in comprehensive planning (number of participants) Participation in nature-based programs (i.e., guided hikes) and stewardship programs (number of participants) Volunteers for nature-based activities (number of volunteers)
	Visitation	Daily park, trail, and nature space visitation (number of visitors) Annual park, trail, and nature space visitation (number of visitors)
	Ecoliteracy	Ability of residents to identify common species of flora and fauna (percent of population) Primary school nature-based education (number of schools and programs, and percent of students)
Biophilic Planning and Governance	City Budget Allocation	Allocated budget for park, trail, and nature conservation, restoration maintenance, and programming (budget amount, percent of overall city budget)
	Adopted Plans and Policies	Existence of a biophilic strategy, action plan, or equivalent Number of comprehensive plan elements that incorporate biophilic principles and related specific recommendations Adopted plans with specific recommendations incorporating biophilic principles
	Interagency and Multi-stakeholder Coordination	Number of city or local government agencies involved in interagency cooperation pertaining to biophilic city planning (agencies involved) Non-governmental partners involved in nature-based planning efforts and programs (partners involved)

conditions, while also improving human health and well-being.

Despite this international consensus of the importance of nature in cities, the indicators of biophilic conditions can vary tremendously according to the ecology and culture of a city. This variety is reflected in the diversity of cities participating in the Biophilic Cities Network. Integrating nature can look very different in Edmonton, Canada, as compared to Colombo, Sri Lanka.

What are the biophilic indicators for your city or community? Biophilic Cities is [available to](#)

[consult](#) on the preparation of a baseline conditions assessment and the identification of indicators that reflect local priorities that are synergistic with local biophilic aspirations.

Resources

Biophilic Cities Consulting. <https://www.biophiliccities.org/consult>.

City of Los Angeles. 2020 Biodiversity Report. <https://www.lacitysan.org/cs/groups/public/documents/document/y250/mduy/~edisp/cnt052553.pdf>.



Tapiztree

By Members of the Tapiztree Organizing Committee: Manuel Azpurua, Carolyn Bartroff, Sam Chae, Naomi Eshghi, Ella Garcia, Jorik Garcia, Billie Joan Hill-Baldauf, Leah Ullman, Krislarie Vallejo-Menes

Tapiztree is a high school student-led environmental activist group formed in spring 2021 in Miami-Dade County when students returned to campus after the pandemic shutdowns. We felt that the pandemic showed the importance of school campuses and how interconnected mental and physical health and learning are with equitable access to nature.

We started Tapiztree to help

students take the lead in “greening up” Miami-Dade County Public Schools (MDCPS) campuses, especially in low-to-moderate-income neighborhoods. Our Organizing Committee (OC) includes students from seven different area high schools. We are working with students on roughly a dozen campuses throughout Miami-Dade County to apply varied methods—community-building, art, science, advocacy, design, and ecology—to transform campuses into

“Casas de Biophilia.” (We love diversity in people, methods, and languages!)

Facing Obstacles

We’ve encountered some obstacles. MDCPS is the fourth-largest school district in the country, so bureaucratic issues exist: some principals are reluctant to approve projects—like setting up air quality monitoring devices (even when donated!) or adding plants to

interior areas (cost, upkeep, humidity?)—unless they get an okay from higher-ups. We didn’t have the political clout to convince the School Board to include a biophilic commitment in last year’s Clean Energy Task Force report, which would have created a mandate for change. We know we need to build our advocacy capacity.

Building Support

We are building key relationships to make sure there is MDCPS support for ongoing activities. School Board Member Lucia Baez-Geller, a former high school teacher, has guided and encouraged us at every step. She’s amazing! MDCPS Sustainability Officer Karly Pulido, who starting in September 2022, is a key partner. Director of Design Erick Laventure coordinated our first webinar, and Tim Beatley helped by explaining biophilia and the work of the Biophilic Cities Network.

Mayor Daniella Levine Cava has been inspirational in moving Miami-Dade County government forward on sustainability issues. Tapiztree has received information and support from the County’s Resilience Director Jim Murley, Interim Heat Director Jane Gilbert, and Communications Officer Brenda Krebs.

We’ve gotten the most day-to-day support from two community groups—Advocacy Partners Team (APT) and People’s Economic and Environmental Resiliency Group (PEER). We believe it is important for students to build a network

that includes school district staff, elected officials, and community groups because student leaders change every year; a support infrastructure is needed.

Making Progress

We think of our work as happening on three levels: people, project, and policy. We need to recruit and keep students involved; continuously build skills and knowledge; help students carry out projects at their own schools; and support policy change at the district and city/county levels. We’ve made progress in each area:

- We advocated for Miami-Dade County to join the Biophilic Cities Network, a move Mayor Levine Cava supported, and the County joined.
- Our OC has representatives from seven high schools in MDCPS, and our members come from more than a dozen different high schools.

Recently, students from Broward County in Florida and Davidson County in Tennessee also joined our WhatsApp chat and online meetings. On some campuses, we work primarily with environmental club members; while on other campuses, leaders in mental health clubs are active in encouraging the creation of mental health rooms with biophilic design elements.

- We’re slowly making biophilic education a reality in MDCPS. In early 2022, we were recognized for advocacy by the MDCPS School Board. Now, together with Board Member Baez-Geller, Sustainability Officer Pulido, and Miami-based architects ArquitectonicaGEO, Tapiztree is co-leading a pilot field trip, taking students from several high schools to the Lakeside Villages area at the University of Miami. Students will learn about the value of human-



nature interactions and do a “scavenger hunt” to identify biophilic design elements at Lakeside Villages. A panel with representatives from MDCPS, ArquitectonicaGEO, the University of Miami, and PEER will talk about how students can build biophilic “Green Campus” projects to bolster physical, emotional, aesthetic, and education experiences on all campuses. Tapiztree will then lead students in a project planning workshop.

- Tapiztree has kicked off its air quality monitoring project. Schools have been targeted by zip code for this a grassroots science project. Monitoring air quality is an issue of concern for environmental, racial, and economic justice.
- Tapiztree shares information and activities through our Instagram site: [@Tapiztree](https://www.instagram.com/tapiztree).

Last summer, OC members came together for a two-week writing intensive to write and illustrate a Student Guide to Green Campuses. The guide helps students understand biophilia and get creative about implementing biophilic projects in their own schools. We’re revising it this year and plan to distribute it more widely as a student-written reference.

Next Steps

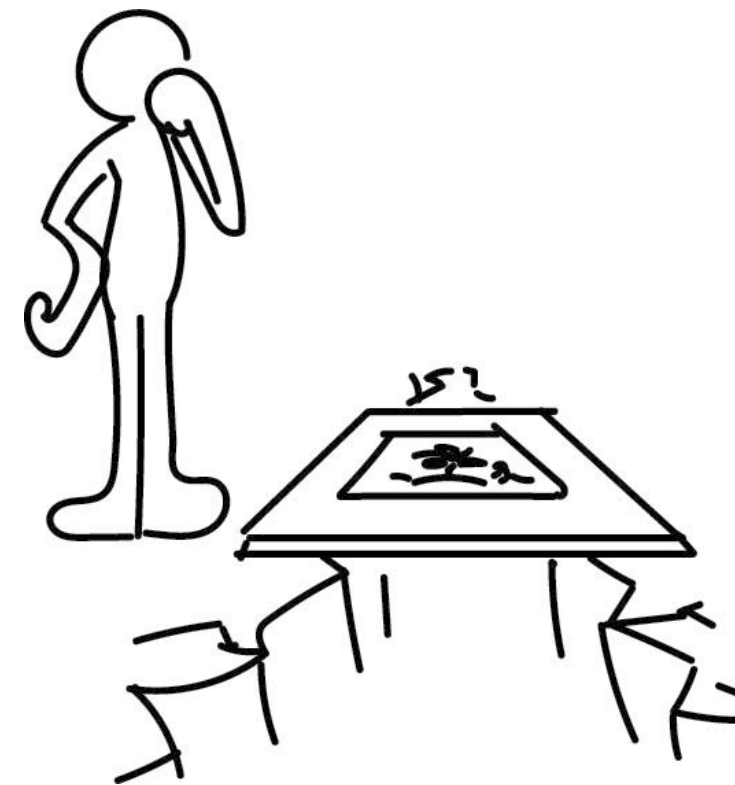
This spring, an important goal is to bring new student-organizers into the OC to replace those who are graduating. We’re also hoping to work with the School Board to introduce a sustainability goal into the annual School Improvement Planning process.

And we’d love to connect with students from communities throughout the Biophilic Cities

Network! We’d like to help weave the threads of environmental justice and biophilic design more closely together – after all, our name is “tapiz,” Spanish for tapestry to reflect the diversity of South Florida, and “tree,” to reflect that nature is part of our diversity and our community. We seek a more verdant and equitable Miami, and we believe that students’ voices are vital in this endeavor.

Resources:

Tapiztree Group (@tapiztree). Working towards implementing biophilic design principles into Miami Dade County! <https://www.instagram.com/tapiztree>.





Chimney Swift (*Chaetura pelagica*)
By Andrew C, CC BY 2.0,

Sharing Our Chimneys: Efforts Underway in Canada to Support Threatened Chimney Swifts

By Tim Beatley

One of the things that I look forward to most every spring is the return of Chimney Swifts. It is an absolute delight to hear, usually one day in April, their beautiful chattering overhead. Their aerial feats are spectacular, and I feel like their presence is a big part of what “home” feels like to me.

Chimney Swifts (*Chaetura pelagica*) are not doing well, however. Recently, I had a conversation with Veronica Connolly of Birds Canada, who heads the Chimney Swift Fund, with funding from Environmental and Climate Change Canada, to support Chimney Swift conservation projects.

The year 2022 has been the fund’s pilot phase, Connolly told me, providing funds for seven

projects. Most of these projects are chimney retrofits or repairs, all of which are specifically classified as critical habitat under Canada’s endangered species law. There are some 1,000 specific sites throughout Canada that have been identified. The sites are often identified through a local swift monitoring effort; especially helpful have been localities participating in a citizen science effort called Swift Watch.

The seven projects funded in this initial round demonstrate the special role that buildings and the built environment can play, in the case of this bird species at least. Chimney Swifts once depended on cavities in larger, older trees, but over time building chimneys alternatively became sites for nesting and roosting during migration. But,

in recent years, many of the chimneys the birds rely upon have been capped or lost to demolition. “In Canada, most of the chimneys that are used by swifts were built before the 1960s,” says Connolly. “So, a lot of those chimneys are damaged and they’re in need of repair and often what people do is they end up demolishing them [rather] than repairing them.” Largely as a result of these trends, Chimney Swifts have seen a sharp decline in their numbers. Connolly tells me that the current Canadian population has declined by 90% since the 1970’s. Chimney Swifts become another good reason for preserving older buildings.

The sharp decline in numbers has led to their designation as a threatened species, which, in turn, requires the preparation of

a recovery plan and designation of critical habitat. The map of critical habitat consists of about 1,000 specific sites in Canada, which for the most part are individual buildings with chimneys used by the swifts. As Connolly explained, each of these building owners would have received a letter telling them of the status of their home or building and its importance for swifts. How do homeowners respond, I wondered? Some are clearly not happy with the news, but many are quite excited, she told me. There are legal implications, of course, but also the chance to learn about and actively care for these magical birds, to add a layer of wonder and meaning to one’s home space and to create the opportunity to view a house or a building as a form of habitat.

And the Swift Fund offers at least some financial help in making sure these habitats remain. The grants offered are modest in size, to be sure, ranging from \$1,100CAD to \$43,000CAD, and cover up to half the cost of a project. Connolly hopes the funding level and numbers of projects supported will increase in future years.

Two of the projects funded in the pilot year involve churches. In one case, the parishioners raised money to cover the church’s share. In this case, Connolly explained, the president of the parish has a special interest in birds. Churches may be an untapped source of energy and resources for these kinds of urban conservation projects, as the fate of these magical birds so engaged in heavenly flight ought,

one would think, to be a matter of alarm and concern to churches and church members.

How to stop the conversion and capping of chimneys is a challenge. Connolly explained that it is a combination of upgrades made to home heating and cooling systems (that typically lead to the installation of metal linings that make it impossible for swifts to build nests or attach to the sides), and many homeowners seeking to cap their chimneys to prevent critters like racoons from getting inside. It is possible to design a special chimney cap that allows swifts to roost and nest but also excludes other critters. One such cap has been designed and built by a company called Maçonnerie JB and has been installed on two of the chimneys at the



The newly renovated chimneys of the Saint-David de Sully church, in Quebec. Photos by Steve Thériault.



headquarters of Éco-Nature in the Quebec city of Laval. It is a clever design though not yet a commercially available product.

There are other things that cities can do. In many places, swift towers have been built, though in Canada these have not been very successful. The experience in U.S. cities has, for unknown reasons, been more successful. A prominent example is the Chimney Swift tower constructed in Atlanta's Piedmont Park (to hear more about this and efforts to make Atlanta bird-friendly, see our short documentary film [here](#)). In some places, the building of small nesting towers has become a civic project (like a tower I visited in West Virginia built by boy scouts). Communities might mandate or at least expect that when an existing older chimney is demolished or capped that a compensatory nesting and

roosting space be provided. A growing trend in European cities is the building of wildlife-friendly developments that often include the inclusion of "swift bricks" that provide nesting spaces in building facades for Common Swifts.

Some localities, such as the City of Béarn in Quebec, prohibit the sweeping of chimneys during the nesting season. This reminds me of the conversation I had several years ago with Jim Bonner, Executive Director of the Audubon Society of Western Pennsylvania, which is an area that includes the City of Pittsburgh. He told me of the encouraging work to install swift towers in the parks around that city, but also some creative ideas for engaging homeowners in swift conservation, including the unique idea of working with local chimney sweeps: could they

not offer interested homeowners the service of taking away the chimney cap during nesting and migration seasons, and re-attaching them during the late fall or winter when the swifts are gone?

I asked Connolly about the importance of also saving large trees, those with nesting and roosting cavities, that were so important to the Chimney Swifts in the deeper past. Not much is known about how current populations use large trees and there are typically few efforts to map or monitor such trees in and around cities. To conserve Chimney Swifts, every city should attempt to take stock of the nesting and roosting sites, chimneys certainly, but also older trees and forests where natural cavities may be found. This is yet another reason to leave grand snag-trees in parks and

along streets and to cultivate an alternative aesthetic that sees such dead or dying trees as beautiful and, as long as they are not a hazard to the public, worthy of appreciation and protection.

Chimney Swifts are also in jeopardy because of a rapid decline in the supply of flying insects, implicating the excessive use and increased toxicity of pesticides, but also factors such as light pollution. And of course, we need in turn abundant trees and plants to sustain what E.O. Wilson called those "little things that run the world". Look up at the end of the day in many parts of North America and you will see those Chimney Swifts banking and swooshing at high speeds, a charming and animated reminder of the interconnectedness of the nature of cities.

Resources:

Making Atlanta a Bird-Friendly City [video]. Biophilic Cities Films. <https://www.biophiliccities.org/bird-friendly-atl-film>.



Chimney Swift tower at the Shaler Area High School
Image by Audubon Society of Western Pennsylvania



Chimney cap designed by the company Maçonnerie J.B.
Photo Credit: Maçonnerie J.B.



Chimney Swift, Austin Texas
Photo by Jim McCulloch (CC BY 2.0)

An Immense World by Ed Yong

Review by JD Brown

The Immense World of author Ed Yong is the umwelt of animals, the perceptual world that animals sense and experience that adds layers and layers to the world that we experience as humans. The term umwelt, defined and popularized by zoologist Jakob von Uexküll more than 100 years ago, provides Yong with an ideal touching point to guide his detailed exploration of the science of the perception of animals.

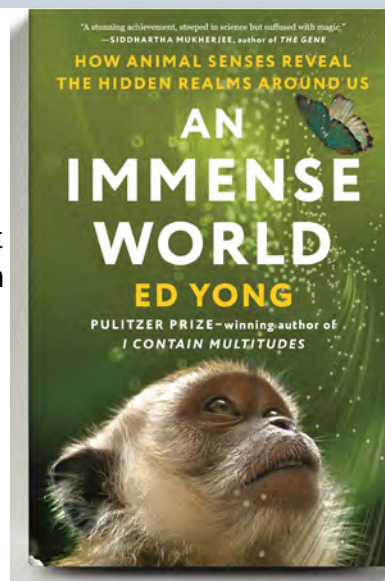
Like an impressionist painter, Yong creates a multifaceted world that, while sharing a temporal plane with humans, feels like a vastly different place. In short, Yong invites you through the doors of perception (without the aid of illegal substances).

A few of my favorites include the tactile superiority of otters and their “penchant for disassembly”, the neon-blueberry eyes of scallops, the near freezing hibernating body temperature of the thirteen-lined ground squirrel, the ocean traversing songs of

whales, and the subtle tempo of bird songs that are hidden to the human ear.

Even if we lack the perceptions of animals, biophilic benefits are there for the taking for those that can learn to immerse themselves for even a moment in an expanded umwelt. The science of biophilia documents the health and wellness salutary effects of time spent in nature; benefits that can potentially only expand as the umwelt of other species are better understood and explored.

The challenge for those that are moved by this opportunity and desire to not only perceive these experiences themselves but to invite the same possibility for future generations is: how do we



nurture an environment where species with a multitude of varying perceptions feel at home?

Perhaps one avenue is not over-think it and to simply let nature do what it does best. Yong quotes one scientist’s statement that “[n]o robot is as sophisticated as an insect” to remind us that evolution is “a far superior innovator that works over a much longer time frame” (Page 129).

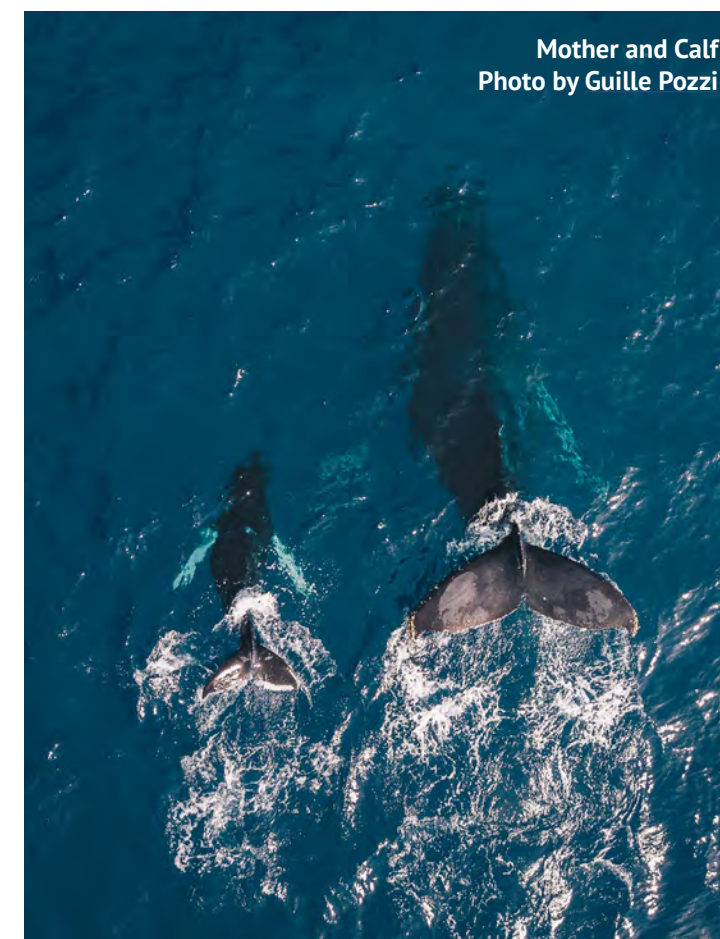
A second critical action is to question the status quo. Yong laments that in our present world “[w]e normalize the abnormal, and accept the unacceptable” (page 352). This includes a vast majority of the global human population where their perception of nature is extremely dampened in the form of light-polluted skies and constant ambient noise. Via the present course of the Anthropocene epoch, resultant climate change and biodiversity freefall, we are headed in the precisely the wrong direction. “Instead of stepping into the Umwelten of other animals, we have forced them to live in ours by barraging them with stimuli of our own making” (336). The result is a “homogenizing” human influence (347).

Instead, Yong urges readers to enter the “wilds of perceptions” (353). Echoing the words of William Cronon and his critique of holding the magnificence of nature as something apart from ourselves and our daily experiences, Yong advocates us to perceive the world through other senses, “to find splendor in familiarity, and the sacred in the mundane.” These wonders exist outside your doorstep and ready to explore through investigations of the umwelten of animals.

Ed Yong. 2022. *An Immense World*. Random House. New York. <https://www.penguinrandomhouse.com/books/616914/an-immense-world-by-ed-yong>.



Singapore Otters
Photo by Tim Beatley



Mother and Calf
Photo by Guille Pozzi



White-crowned sparrow
Photo by Andy Holmes

Awe: The New Science of Everyday Wonder and How It Can Transform Your Life by Dacher Keltner

Review by Tim Beatley

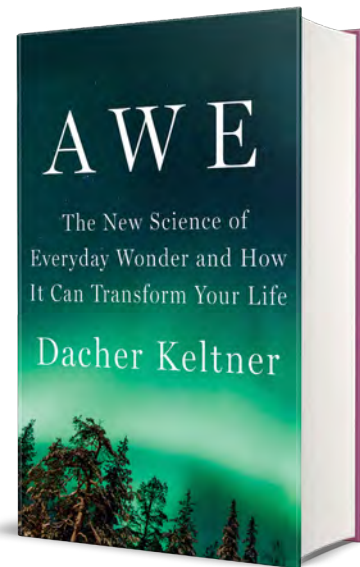
We ought to aspire to live in cities that induce experiences of awe and the powerful advice and groundbreaking research of Dacher Keltner contained in this wonderful new book can help guide the way. A psychology professor at the University of California at Berkeley, Keltner has been the leading researcher on awe and producer of creative and groundbreaking studies on the power of awe. Keltner defines awe as “the feeling of being in the presence of something vast that transcends your current understanding of the world.” Nature (or what he calls “wild awe”) is one important source, according to Keltner, but there are many others, including moral beauty, music, visual design, and experiences of life and death. The book presents a thorough and comprehensive summary of the academic research (Keltner’s and others) as well as many personal stories and anecdotes, and insights from interviews with many “awe pioneers.”

While experiences of awe from nature comprises but one chapter in the book, there are many clear nature implications from each of the other sources of awe that Keltner identifies (what he refers to as the “8 wonders of life”). Moral beauty—finding awe in the remarkable kindness and virtue of individuals—is something that characterizes many who are pioneers and champions of nature (one thinks of Jane Goodell, who he cites as a personal hero in the book). The set of awe-experiences is called “Collective Effervescence” (a term coined by sociologist Émile Durkheim) and refers to our collective feelings when moving together in public spaces. The psychological experience of walking is a major topic taken up here, and again there are many examples of overlap with the awe experienced from wild nature. Walking (and hiking, running, climbing) in nature is an immense opportunity to combine feelings of connection with awe. The “awe walk” is an especially potent

device explored in Keltner’s research and suggests walking with the right frame of mind (with instructions to “take in the vastness of things”). Art and architecture, and visual design more broadly, is another source of awe. Here, as well, there are important intersections. A building like the WOHA designed Park Royal Hotel in Singapore, for example, mingles in striking and novel ways elements that are artistic and the natureful, and often elicits surprise and “whoas” (my first reaction in seeing the hotel from the street). In these ways, the entire book is about wild awe.

One key message from the research and the book is that experiences of awe can be profoundly transformative. They can shift our emotions and perceptions away from what Keltner repeatedly refers to as our “default” condition: one of self-interest, independence, and narcissism. Through awe, narcissism recedes, and we begin to see ourselves as part of something larger. We are, in short, better human beings when we experience awe, and our lives are happier and fuller of joy and delight.

Another key point in the book is that awe can and should be thought of as an everyday experience. Like everyday nature, everyday awe can be encountered around us where we live and work; by gazing out one’s window or during a morning



Park Royal Hotel, Singapore
Image by Tim Beatley

stroll. Travel to a distant national park or a remote wilderness park is not necessary to experience awe. The implications for biophilic urban planning are many and profound: we must work against urban trends that interfere with opportunities for awe in cities; for instance, the proliferation of light pollution that makes experiencing the vastness of the night sky so difficult. And we must work, on the other hand, to expand the possibilities for moments of urban awe. The unexpected sighting of a humpback whale from a Manhattan cafe or an encounter with an ancient oak tree along a sidewalk can encourage us to ponder the vastness of time. Planners should work to better understand these potential awe experiences and see them as assets to map, inventory, and make visible in plans and planning documents. Maybe cities need an urban awe-plan or awe-strategy to ensure a more careful and systematic approach, and to make sure that the powerful benefits and transformative potential of awe are fully understood and prioritized in our vision of biophilic cities.

I think there’s a strong case made here by Keltner

that to move in the direction of a more just, sustainable, and natureful world, and to address the range of problems we face from deforestation to homelessness, will require us to break out of our “mean egoism,” as Keltner calls our default human condition. This book gives us the research and scholarly underpinning to believe that this is possible and provides an exciting and hopeful agenda for how to make cities more awe-inducing and wondrous.

Dacher Keltner. 2023. *Awe: The New Science of Everyday Wonder and How It Can Transform Your Life*. Penguin Press. New York, NY. <https://www.penguinrandomhouse.com/books/622175/awe-by-dacher-keltner>.



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