



BIOPHILIC CITIES

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ISSUE THEME *The Ocean City*

THE NATUREFUL CITY *Rediscovering Nature in a Pandemic Era / Tim Beatley*

PARTNER CITY FEATURE *Blue Wellington / Celia Wade-Brown*

FEATURE *Cape Town, A Coastal African City / Camila Coogan Budden*

PIONEER INTERVIEW *Saving Biscayne Bay / Interview With Irela Bagué*



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

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

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

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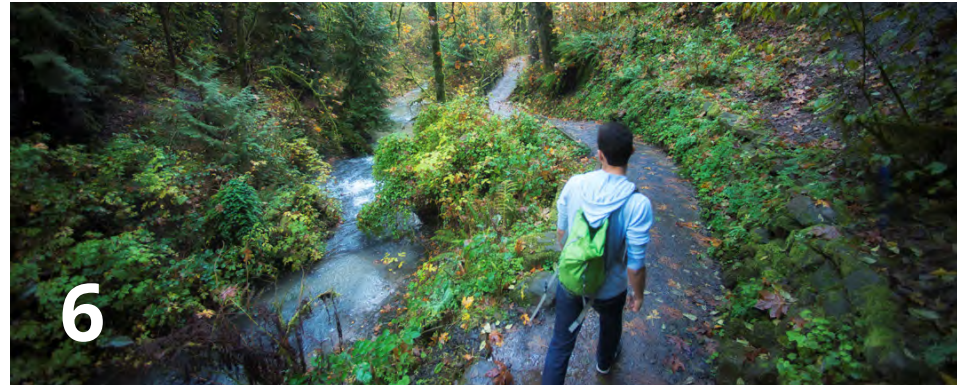
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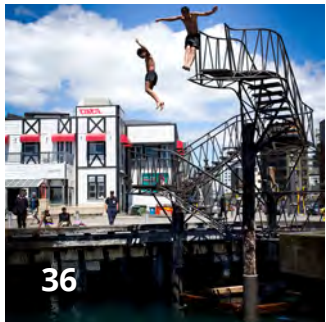
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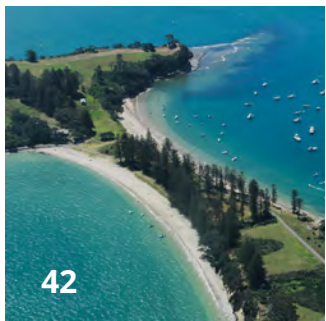
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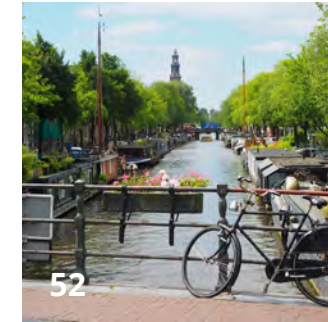
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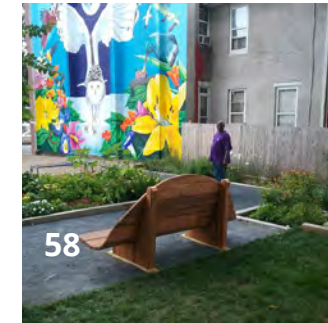


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Front and Back Cover: Proposed Venice Park
 Image Credit: Farrow



Forest Park, Portland, OR
Photo Credit: Forest Park Conservancy

The Natureful City: Rediscovering Nature During a Pandemic

By Tim Beatley

As spring returns to much of the Northern Hemisphere, there is renewed joy at the budding trees, emerging flowers, and a sense of the steadying rhythms of nature. The pandemic rages on throughout the world, with deaths surpassing 550,000 in the United States alone. Despite the promise of widespread vaccinations, mental health concerns, such as excessive stress, anxiety, and depression, are the reality for many.

The pandemic has further amplified the importance and essential role nature plays in our lives as a steadying force and source of solace. Whether the efforts in many cities to make nature and outdoors more accessible -- by repurposing streets, creating new pedestrian

spaces and pop-up parks -- will continue remains to be seen. Even as we emerge from this global crisis, there will be much trauma to recover from, and spending time in nature will play an essential role in restoration.

Will the significance of nature during the pandemic shape the planning and policies of cities after the pandemic? I hope so. In places like Singapore, lockdowns have ignited a debate about priorities in public landscaping. There has been a collective epiphany that residents want more wildness, birds, and butterflies rather than rigorously cut and tended grass. In cities like Paris, birdsong and other natural sounds have filled the audible void left by cars. Will residents demand and

policy-makers ensure that these experiences continue?

The embrace of walking and bicycling, and the permanent curtailment of roadways seem like promising signs for the future of biophilic cities. There have been some policy barriers associated with nature during the pandemic. Biophilic Cities champion, Nina-Marie Lister, experienced first-hand the Toronto's Tall Grass and Weeds Bylaw, essentially making her native garden and others like it illegal. Lister has helped to set in motion a conversation within the city and beyond about misguided and antiquated codes and the need to cultivate a new "lawn order" (in the words of a clever Globe and Mail article author).

The continuing pandemic has made many aspects of our work more complex too. We had to cancel a terrific symposium on biophilic design, headlined by Wong Mun Sum of WOHA, which was highlighting an inspiring collection of projects and design work. We were also unable to hold our annual [Biophilic Leadership Summit](#) at Serenbe, outside of Atlanta, something we had enjoyed over the past four years. Hopefully, as the pandemic wanes, we will be able to return to these in-person events, but we will not likely ever fully return to living and working in the same ways we did before the pandemic. The shifting of many meetings and events online has allowed us to participate in ways that would have been difficult before. The extensive travel necessary to attend all of these important events would have been cost-prohibitive and generated a sizeable carbon footprint. Instead, we have made many virtual appearances this year, for instance at the Moscow Urban Forum, and a workshop on sustainable cities organized by the Universidad Científica del Sur in Lima, Peru, among others.

This greater connectivity has also resulted in unexpected conversations with many people that I admire. These discussions have provided hope and many practical ideas about how we might amplify our work. Again, these conversations that occurred via Zoom might not have occurred otherwise. These have included Shubhendu Sharma, founder of [Afforestt](#) (based in Bangalore and New Delhi, India), and Ken Leinbach, director of

the [Urban Ecology Center](#) in Milwaukee, each pioneering a unique biophilic model that our cities can learn from and perhaps replicate. Sharma has now helped create a remarkable number of intensely-planted, mini-forests in communities worldwide, following the tree planting techniques pioneered by Akira Miyawaki. Sharma showed me historical images of the Taj Mahal, with dense forests all around, which is a stark contrast to the anemic vegetation found on the grounds of this iconic architectural gem today. We have forgotten how vital native, biodiverse forested environments have been to us and the birdlife and many other organisms that live with these environments. "We need to bring back these lost forests," he told me. He believes we must begin to apply what he calls "forestscaping," which is the creation of forested public spaces that blend biodiversity, public art and community design.

Ken Leinbach's story is equally instructive. Leinbach is a

former high school science teacher who, after moving his family to Milwaukee, took over and expanded the city's first nascent Urban Ecology Center at Riverside Park. Through his work (and the work of many others in the community he is quick to point out) Leinbach has pioneered a new and compelling model for growing the next generation of nature-connected, environmentally aware citizens. The model involves established relationships with all the schools within a 2-mile radius of the ecology center. Schools transport their students to programs, and the kids often return with their families to visit the ecology center and the park on evenings and weekends. The crime rate in the park went down and the students' academic performance went up.

Leinbach now runs three urban ecology centers in three different neighborhoods, serving about half the city's school kids. His vision, he tells me, is of Milwaukee becoming



Riverside Park branch of the Urban Ecology Center
Photo: Mark F. Heffron

what he calls an “Ecology City,” where “every kid in our city has consistent access to natural lands from an early age and contact with adult mentors.” This fits our vision of Biophilic Cities, helping to advance the idea of a “whole of life” connection with nature.

While our in-person activities have diminished, much of the work around Biophilic Cities has accelerated in other ways. Our messaging has taken the form of national webinars that have reached thousands of viewers. These included a webinar organized by the Robert Wood Johnson Foundation, where I shared the virtual stage with St. Louis Sustainability Director and founding Biophilic Cities member, Catherine Werner. Another webinar, organized by the National Audubon Society, was live-streamed to more than 14,000 members through the Audubon’s Facebook page. Some of the virtual presentations that we give are also to smaller groups, and these talks sometimes lead to the most engaging discussions and insights about the nature of a city. I recall one presentation to the Garden Club of Pittsburgh, where I learned about the importance of that city’s public steps -- a network of several hundred steps that form a sometimes forgotten pedestrian infrastructure in this hilly city. We have now added public steps to our global [pattern library](#) and are already seeing connections to similar mobility systems in San Francisco and other cities.

Our virtual lives and work have also allowed us to maintain and

deepen connections with other organizations. We presented to the [NATURA](#) project that we are pleased to be part of, which is linking global nature-based networks to facilitate the exchange of knowledge. We have also participated in several other online events including [The Nature of Cities Festival](#), the [SHIFT](#) conference (typically held in Wyoming) that supports the advancement of the connection to nature as a preventive determinant of health, and the [Biophilic Design Virtual Symposium](#). We were also able to participate in the online Sustainability in the City symposium hosted by the William & Mary Environmental Law and Policy Review for which JD Brown and I co-authored an article on Half-Earth Cities focused on exploring the ways cities might expand their biophilic influence outside their borders.

We have also received some new funding, including a grant from the University of Virginia Environmental Resilience Institute, to collect, catalog, and analyze steps and policies being taken in cities during the pandemic. This work has provided important stories and insights about how cities have creatively adapted to the pandemic by expanding access to outdoor spaces and nature. This work has already led to a series of summary posts and a new [resource library](#) on our website.

We also continue to commission and release short films, including two recent films about inspiring biophilic buildings: The Frick Environmental Center and the

Phipps Center for Sustainable Landscapes (CSL) in Pittsburgh (the latter featuring Phipps director, Richard Piacentini).

My latest book, *The Bird-Friendly City* (Island Press, 2020), was published in November and is an effort to show some of the ways that cities can begin to better care for and love the birds that have meant so much to us during the pandemic. From fritted and bird-safe windows, and lights-out campaigns to creative efforts to manage the impacts of feral and domestic cats, there are many things cities (and the planners, birders, and homeowners who live there) can do.

I continue to make the case that the status of birds is a meaningful way to judge the progress of cities. What is beneficial for birds (whether reducing light pollution and pesticide use, or expanding areas of trees and native plants) will also benefit humans. Co-flourishing is an especially needed goal today. I continue to believe that birdsong is a critical metric of a flourishing city. I have been pleased to speak to various local and regional bird groups as a result of the book. It is a chance to expand the conversation about biophilic cities to a group that has heard little about it but is preternaturally inclined to embrace it. It has been eye-opening to see the remarkable number of activists and volunteers working at the grassroots level to defend birds. There is a clear and essential synergy with those cities and staff supporting the vision of biophilic cities, and we must

continue to look for ways to join forces in making our cities more biocentric and natureful.

In November, we also happily welcomed the City of Toronto as our newest partner city. Toronto has been a leader in many areas and an inspiration for cities working to create livable and biodiverse environments. We also have had numerous discussions with cities that we hope will formally join the Network or become potential collaborators and partners in the future. The list is long and geographically diverse, with Medellin, Doha, Lima, Boulder, and Cape Town being just a few of the cities we have been engaging. We continue to develop new international collaborations, such as a new initiative with colleagues at Monterrey Tech in Guadalajara, Mexico. We have now launched the first of our Working Groups, made possible by a new web portal and platform for collaboration (funded by

the Robert Wood Johnson Foundation).

The theme of this issue is a significant one for me. We continue to struggle with protecting and sustaining our ocean ecosystems upon which so much of life depends. Cities have great potential to step into and work to protect our oceans and marine environments. For many coastal cities, there is remarkable nearby nature to be rediscovered by residents. This issue of the journal has an impressive set of stories -- with dispatches from Plymouth (UK), Venice, Kazan (Russia), Wellington, and Miami -- providing a cautionary but optimistic view of what is possible. We need to activate as quickly as we can a global movement of biophilic ocean cities that can replicate and advance many of the creative ideas and efforts described in these articles. We are the blue planet and increasingly a planet of cities, so we must

begin to recognize the essential interconnections that exist.

I wish you good reading and hope that you will be as inspired and as filled with a sense of optimism about the (post-pandemic) world as I am!

Resources:

Afforest. <https://www.afforestt.com>.

Biophilic Cities. Value of Nature in the Time of the Pandemic. <https://www.biophiliccities.org/covid19-research>.

Biophilic Cities. Pattern Library. <https://www.biophiliccities.org/pattern-library>.

Biophilic Leadership Summit. <http://biophilicsummit.com>.

NATURA. <https://natura-net.org>.

Urban Ecology Center. <https://urbanecologycenter.org>.



Tufted Titmouse
Photo: Josh Madison



A spectacular and uplifting viewpoint over Plymouth Sound, UK
Photo: Simon Pittman

Transforming City Seascapes for Healthier People and Planet

By Simon J. Pittman & Katherine Moseley

The edge of the sea is a strange and beautiful place.
- Rachel Carson

Coastal cities sit on the edge of an immense and dynamic watery wilderness capable of generating great intensity of feeling and measurable benefits to our wellbeing. As societies increasingly turn to the ocean for solutions to sustainable living, the characteristics of urban seascapes that generate health services are also beginning to be considered an asset in

natural capital accounting. The therapeutic value of coastal seascapes, recognised for millennia, is now experiencing a resurgence in urban planning through the desire to improve city living and address health inequalities.

Health-enabling places and spaces where water (saltwater or freshwater) is central to promoting health and wellbeing have been termed “blue spaces” (Foley & Kistemann 2015). Creation of blue spaces is an

important role of blue urbanism. Public access to safe blue spaces is a key enabler of “blue health” and a characteristic that has been overlooked in modern urban environments.

Much of the seascape of cities has been obscured from view or made inaccessible for many. Engineered structures such as walls, buildings, private real estate, or exclusive zoning for industrial use and transport infrastructure such as harbours, ports and airports have limited



Regeneration of a city beach park in Plymouth, UK
Source: BlueHealth2020.eu

public access. The gentrification of waterfronts often forms barriers to inclusive access to the ocean and is a challenge for blue urbanism that seeks to create greater opportunities for positive ocean connections.

For many coastal cities with historic ports, however, deep maritime roots underpin their evolution through centuries of ocean-going trade and remain intertwined with the city’s cultural identity. At a meeting to discuss the establishment of the UK’s first National Marine Park, led by Plymouth, “Britain’s Ocean City”, the City Council leader Mr. Tudor Evans exclaimed: “Plymouth wouldn’t be a city of quarter of a million people this far west if it weren’t for the sea. The sea is in our DNA.” This feeling and maritime identity is likely echoed by many citizens of historic port cities.

Coastal cities, however, continue to have multifaceted and largely negative impacts on local ecosystems and the global ocean. A desire for healthier cities amid growing concerns over pollution requires that coastal cities develop innovative ways to inspire and empower communities and institutions to embrace, enjoy and better care for city seascapes. There is nothing on Planet Ocean more contested than the water and, despite the remarkable diluting and regenerative capacity of the ocean, increasing exposure to cumulative stress from human activity has brought us to a tipping point.

In an earlier article, we aimed to advance blue urbanism in coastal cities through an urgent global Call for Action (The Ocean Cities Pledge) (Pittman & Moseley 2019) to transition coastal cities into healthier Ocean Cities.

Becoming an Ocean City requires an active cultural shift through transformative steps along a blue urban pathway that both nurtures emotional connection to the ocean and its inhabitants and elevates civic pride ultimately leading to actions that create a healthier city seascape. As well as seeking a more harmonious relationship between city and ocean, these initiatives place special emphasis upon the need for safe and inclusive access to the seaside and water for the considerable benefits to public health and wellbeing. Ocean-focused and community-centred placemaking is a key activity in the implementation of blue urbanism and a nexus for urban transformation of coastal cities where considerable new creative energy is being directed worldwide (Beatley 2014). Here, we present our thoughts and some evidence for blue health benefits associated

with encounters with the ocean and highlight some city-led initiatives that show potential for transforming urban coastal space into blue space for greater community wellbeing.

Therapeutic City Seascapes

There is a growing body of evidence suggesting that time spent in, or in view of, the ocean can benefit mental health and enhance social cohesion and resilience. Although the ocean and coasts have long been valued as restorative places that promote vitality, it is only relatively recently that blue health has become a topic of growing interest among scientists, medical practitioners, and policy makers around the world. Several studies have confirmed that a view of the sea has mental health benefits such as lowering anxiety and the risk of depression. In England, a survey of 26,000 respondents found that adults from the most deprived areas closer (<1 km) to the coast experienced the greatest self-reported mental health benefits ([Garrett et al. 2019](#)).

Research suggests that activity-based ocean therapies applying principles of occupational therapy are effective for generating psycho-social wellbeing in participants ([Britton et al. 2020](#)). Wallace J. Nichols' "blue mind" concept captures the meditative state of mental wellbeing induced by some water-based activities. Wellbeing has been found to be linked to a diverse range of activities (e.g., kayaking, swimming,

walking) and feelings (symbolic, achievement-oriented, social and immersive experience) ([Bell et al. 2015](#)). Comparative studies across a range of environments have repeatedly shown that blue spaces are among the most restorative with people being happiest in coastal environments ([White et al. 2020](#)). Important progress has been made to strengthen the evidence base in the field of oceans and public health by researchers at the [European Centre for Environment and Human Health](#) through Projects such as BlueHealth and SOPHIE (Seas, Oceans and Public Health in Europe).

Blue Spirituality in Coastal Cities

Watery places have spiritual power that has been recognised throughout history by indigenous and ancestral cultures, with some sacred water sites becoming places of pilgrimage and remembrance. With the sacredness of this interconnected relationship comes understanding, respect, and a relatedness and reciprocity that is restorative. In contrast, coastal cities have rapidly departed from reverence for the ocean while building their relationship with the water upon economic and recreational needs that fail to adequately safeguard ecological integrity. Coastal cities as a global collective have become dissociated from the essential life-giving properties of clean water and air and increasingly struggle to accept the inevitable need to transition to a way of living that is more harmonious with the local and global living system.

The climate and biodiversity crises are shining the light on cities and catalysing change. Water carers of all kinds are emerging, from activists to scientists and city leaders, to acknowledge their kinship with watery places by pledging their commitment to its health and vitality. There is a movement towards a reconnection to the "ecological self" that is knowingly, or unknowingly, being manifested in pockets of activity in and around coastal cities. A step towards reconnection with our ecological self and an integration of spiritual environmentalism, rooted in animistic and biophilic philosophy, is unfolding and permeating into the legal system through frameworks such as Earth jurisprudence and the granting of legal rights of personhood to water bodies (e.g., Whanganui River in New Zealand). Although legal protection is welcome and necessary, ideally a new relationship to the rest of the natural world must be based on responsibilities rather than relying on legal rights.

Connecting to the Ocean through Experience

Direct experience provides opportunities to form an emotional connection with the ocean and its inhabitants and to build a healthy relationship. Enabling such opportunities should be an important function of blue urbanism. Encountering marine life, especially large charismatic species, is captivating, often joyful and creates great excitement whether a fleeting glimpse of a seal in



A popular bay for year-round swimming in Plymouth City, UK
Photo: Simon Pittman

Plymouth Sound, a rare visit from a pod of orcas in Vancouver's False Creek, the majesty of humpback whales breaching in New York Harbour, or manatees cruising along an urban canal in Miami. As a non-resident, terrestrial observer of the ocean, our visual experience is usually focused on the ocean surface with the vast three-dimensional fluid volume and seabed largely unperceived. Yet, with the help of technological innovation such as internet-linked underwater cameras we can livestream marine life worldwide. With immersive 3D virtual reality seascapes augmented with

images of real marine life we can become a virtual SCUBA diver to explore beneath the surface.

Greater connection is likely through participation in community-based restoration activities such as seagrass and saltmarsh planting, beach clean ups and citizen science projects including marine monitoring programmes. Enhancing ocean literacy is key to blue urbanism. City seascapes have great potential for ocean exploration yet are sometimes overlooked in terms of the potential for local education and outreach. The creation of ocean schools,

or beach schools, (both digital (e.g. [Ocean School](#)) and outdoor (e.g. [Beach School South West](#))) with regular school visits to the seaside to learn about marine life and the importance of responsible ocean stewardship will enrich coastal city living. In Plymouth, the National Marine Aquarium's Ocean Conservation Trust together with local marine science institutions and schools have created an Ocean Curriculum with a strong climate change component for primary schools. In the Maldives, the Parley Ocean School takes an immersive approach to inspire and empower the next generation of ocean guardians.

Some early evidence suggests that the emerging concept of marine citizenship is most strongly expressed through sensory experience of the sea and is associated with a marine identity. Marine citizenship recognises that individual behaviour can impact the health and management of the ocean and seeks to encourage personal environmental responsibility and action together with a commitment to learning more about the ocean. A major challenge in implementing marine citizenship is the need to understand the social drivers resulting in active participation with environmental stewardship, which can be complex with many different pathways to civic engagement shaped by sense-of-place, identity, empathy for nature and a range of social and emotional place meanings ([Enqvist et al. 2019](#)).

Urban Blue Acupuncture

Strategic placemaking techniques have a hugely important enabling role in blue urbanism by shaping experiences of blue space and promoting connectivity between people and the ocean. Placemaking of blue spaces in coastal cities occurs at a range of spatial scales from large-scale urban regeneration projects (e.g., Baltimore's Inner Harbor, USA or the new coastal city park "Hellinikon Project" in Athens, Greece) to small hyper-localised treatments through urban acupuncture. This strategy views cities as living, breathing organisms and pinpoints areas in need of healing through the creation of finely tuned small-scale (and relatively inexpensive) interventions that are interwoven into the urban fabric. Co-designed with community, these interventions can create spaces for mingling, observing, lingering, educating, and celebrating, as well as quiet places for private solitary contemplation. The intention is that small changes can have disproportionately large impacts on experience and wellbeing, for example, through changes to lighting, seating, access to sea views, safe and inclusive access over water via boardwalks and slopes/steps/lifts, biophilic design, art installations, educational material, and synergies with connected neighbouring areas.

Thresholds and boundaries where contrasting habitats meet and create edge effects are places of heightened fascination. In coastal cities, where grey meets blue, placemaking can

create safe, gentle, and accessible spaces for encountering and connecting with the ocean.

In Plymouth (UK), an urban acupuncture approach was used to encourage people to use blue space at an inner-city beach and coastal park in a collaborative project involving the local community, Plymouth City Council, Devon Wildlife Trust, and local researchers (BlueHealth project) who observed visitors and conducted wellbeing questionnaires before and after the intervention. The project, which focussed on creating perceivable possibilities for action, built an **open-air amphitheatre on the water's edge at Teats Hill with direct access to the foreshore** together with improvements to increase safety, inclusive access, attractiveness, and information on the site's cultural and biodiversity (Bell et al. 2020). Structures such as the amphitheatre provide a suitable seaside venue to celebrate with play, storytelling, ritual, art, dance, and song and indeed the regeneration resulted in an immediate positive uplift in life satisfaction, a measure of wellbeing. Transdisciplinary research involving communities, urban planners, social scientists, health practitioners and policy makers will be needed to shape health-promoting city seascapes.

City Marine Parks

The city marine park concept is a collaborative community-led marine park that celebrate a city's connection to the marine environment and encourage communities to

participate in activities that deepen understanding, value, care, and enjoyment of the city seascape. A city marine park is a holistic concept more closely aligned with urban social policy than conventional marine conservation measures and was designed to support blue urban transformation addressing multiple sustainable development goals through the development of healthy interconnected land-sea ecosystems. Regarding blue space, a city marine park seeks to enhance inclusive access and responsible use of the city seascape for the diverse wellbeing benefits for people and ocean. A core aspiration of the city marine park vision is to create a positive feedback circle that seeks to build and strengthen positive relationships between people and the city seascape through initiatives (e.g., educational, recreational, commercial), campaigns and park-friendly commerce.

The city marine park concept and the declaration of the UK's first city-led National Marine Park has stimulated interest from coastal communities in South Africa, Brazil, and Canada. It is still early days in the evolution of the Plymouth Sound National Marine Park, which since its declaration at the end of 2019 has been stalled by COVID-19 and has now entered a two-year development phase where stakeholders will help to shape the future goals and activities. Projects have already commenced to restore seagrass beds in the park and, with support from the Blue Marine Foundation, to track

fishing gear from satellites to retrieve nets and pots lost at sea. The park designation has helped to highlight Plymouth's commitment to the ocean and perhaps forms a kind of city-ocean reconciliatory process and the beginnings of a way of giving back.

In recent decades, cities have turned their backs on the ocean as industries and supply routes diversified and bathing water quality declined but are now turning to face the ocean once again with new curiosity and appreciation and are looking for new meaning and belief. Our coastal cities must transition now, with some urgency, to become responsible ocean-loving cities forging a healthier relationship with the ocean, receiving inspiration from the ocean, and working in harmony with the ocean, recognising that we can only truly thrive if the global ocean thrives first.

It is a wholesome and necessary thing for us to turn again to the earth and in the contemplation of her beauties to know the sense of wonder and humility.
- Rachel Carson, *The Sense of Wonder*

Resources

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Precious Hatchlings
Image Credit: VSPCA

VSPCA Sea Turtle Conservation Program

By Priya Tallam, Pradeep Kumar Nath, Krti Tallam, Athithya S. Loganathan and Sai Ganesh Veeravalli

CULTURE, COMMUNITY ANIMALS AND CONSERVATION

Living in harmony with animal species means living wisely. This is our mantra as we work toward coastal resilience, the underpinning of which is the Visakha Society for the Protection and Care of Animals' (VSPCA) [Sea Turtle Conservation Program](#).

Since the industrial revolution, human activity has dispatched anthropogenic systems that now impact every nook and corner of our planet. Modern science and technology applied in industry as in communications, medicine, extraction, governance etc., are seemingly more distant from past knowledge of historical or indigenous justice, and animal knowledge. Scientists have raised warnings about disruptive human activities directly causing the loss of species and habitats

and the collapse of several ecosystems, referencing these phenomena as the [Capitalocene](#) or [Anthropocene](#). How would a concerned citizen move forward without despondency? We must work by addition ([Haraway 2019](#)). What does this imply? To us, it implies that every reasonable human can be keenly observant of natural living, opening themselves to a deeper understanding of older cultures, all animals and the ocean; to begin forging a harmony with other species with the aim of building biophilic societies.

Visakhapatnam city in eastern India is a natural port. The city lies within the state of Andhra Pradesh, where the coastline is dotted by four fishing harbors, 353 fish landing centers and 555 fishing villages. There are about 600,000 fishermen, 150,000 seafarers and around

50,000 artisanal fishing crafts in the state. Amid the climate crises and the global CoVid-19 pandemic, the city presents a huge opportunity to root our methods of working in harmony with the fishing community, NGOs, governments, community residents and animals. New science-based knowledge has been obtained by understanding the culture of the fishing community and that of community animals. Beyond the empirical, we have gathered generational understanding of the ocean chemistry and tides, while making animals our kin ([Paulson 2019](#)). This has led us to working sustainably. Harmony with animal kin pays off in value.

Background

In 1996, Pradeep Kumar Nath, founder of VSPCA observed a lone female [olive ridley sea](#)

[turtle](#) in labor at the Pudimadaka shores. Laboriously the turtle laid her eggs and, fatigued, headed back into the ocean. White-bellied sea eagles and local street dogs got to her eggs quickly. The following season, fisher people were selling turtle eggs and the meat of adult turtles. Pradeep knew that he had to work closely with the fisher people to understand their values and love for the ocean. He began compensating them for the turtle eggs and information about female turtles. VSPCA constructed rudimentary in-situ hatcheries to attempt "hatching" the confiscated eggs.

It was here and then that VSPCA's Sea Turtle Conservation began. The government took notice of these actions. In-situ hatcheries were barred, but Pradeep befriended the Forest Department's Divisional Forest Officer (DFO) and planned an approach to develop "ex-situ" hatcheries. DFOs are transferred to other forest regions in 2-year shifts, their learning has spread and VSPCA's methods are now observed in several factions of the Bay of Bengal.

Building Community Awareness

A decade of consistent study and working with the fisher communities has shown a dramatic increase in sustainable practices and living. VSPCA has brought awareness to the community in many respects:

About the Importance of Habitat Conservation

VSPCA has helped build awareness that beach habitat conservation is central to protecting sea turtles and fisher communities, and, that once habitat is lost to development, it is lost forever. Visakhapatnam suffers the consequences of oil, garbage, sewage, ore and chemical pollution. Unattended, these are harmful to residents



Unnatural beach plantations encourage loitering
Image: VSPCA

and big killers of the sea turtle. These industries impact the fisher communities' livelihoods, the sea turtles and, onshore and offshore habitats. As an attractive, green and smart city, Visakhapatnam is seeing more people migrate to the city seeking a better life. If development continues to be the mantra of planners and authorities attempting to make life comfortable for all people, the ocean habitat is bound to degrade further. Jetties, piers, more fisheries, more beach occupations and tourist activity will take over pristine beach habitat ignoring the many species that live here keeping the habitat livable.

About Communicating Environmental Ideas through Nature and Animal Culture

Animal cultures and ancient human cultures have their place. Can we explore them to augment modern day scientific research? How might they direct our approach in terms of "harmony with kin," and the building of a biophilic city?

The turtle is an ally and a teacher for the fisher community. Turtles provide cues about the ocean climate and tides, beach erosion, sand temperature, and moon light. They represent fish stock locations in the ocean. Protecting the turtle means knowing about healthy fish stock.

The fisher people relate strongly to atmospheric and habitat connections. A great deal of information exchange took place between VSPCA and the fisher communities around the sea turtle's importance, for the benefit of all concerned. The fisher people's "science" may be metaphysical; nonetheless, it ties in well with biological and meteorological truths of modern-day sciences.

Respecting their culture, *with the goal of harmony in mind*, VSPCA explored ancient religious traditions, which brought value to the program. For instance, an avatar of Lord Vishnu is the giant turtle "Kurma" who has been protecting the ocean species and keeping the world stable. The Sri Kurmam Temple in Andhra Pradesh, India, is dedicated to the Kurma avatar. Bringing this vocabulary into discussions with fisher men and women helped both sides connect deeply on the cultural story—about the turtle and its importance in conserving the ocean habitat and the species.

Nature is an ally. The fisher communities have a profound understanding of this concept. Additionally, VSPCA's 50-year work with several animal species reveals "animal cultures." Working through cultural understanding of both animals and humans can foster harmony with our kin (inclusive of plants and non-humans) lending to the creation of more biophilic cities (Safina 2020).

About the Value of Science

Empirical research and methodology validate observations. Science provides knowledge from past studies, as well as tools for data analyses. Scientific inquiry is an effective medium to assert truths about "direct" (for instance, cultural) observations. Studying the science of turtle conservation

helped reinforce that the female turtle is an asset to the fisher community. VSPCA views the female turtle as "spokesperson" for her species who straddle land and sea. A female turtle can lay 210 eggs per clutch up to three times in one season.

VSPCA's Sea Turtle Protection Force and the fisher people recognize gravid (pregnant) turtles by shell markings of patterns, scars and injuries. VSPCA illuminated the value of protecting a mother turtle who can lay around 400-500 eggs per season. Protecting one female implied more hatchlings, which positively impact the food web and thereby, the fish stock; spurring healthy ocean flora and overall a healthier ocean. The turtle enjoys eating predatory fish like jellyfish. Jellyfish are versatile and more important to the food chain than scientists previously thought. Olive ridley conservation, in this holistic-harmonious approach, can lead us to biodiversity conservation from within an urban environment.

About the Role of Law as a Tool to Build Coastal Resiliency

Sharing articles widely through Education and Awareness Workshops about the treatment of animals from the Indian Constitution and law and regulations around the illegal capture of sea life, alerted the community about possible infractions. Since its conception, VSPCA has relied upon and employed a legal approach. For example, VSPCA spent over a decade protesting Navy submarine installations (INS Virbahu, INS Viraat and INS Kursura) at this beach. The process exposed the dire need for turtle habitat conservation and a closer look into the species of marine ecosystems.

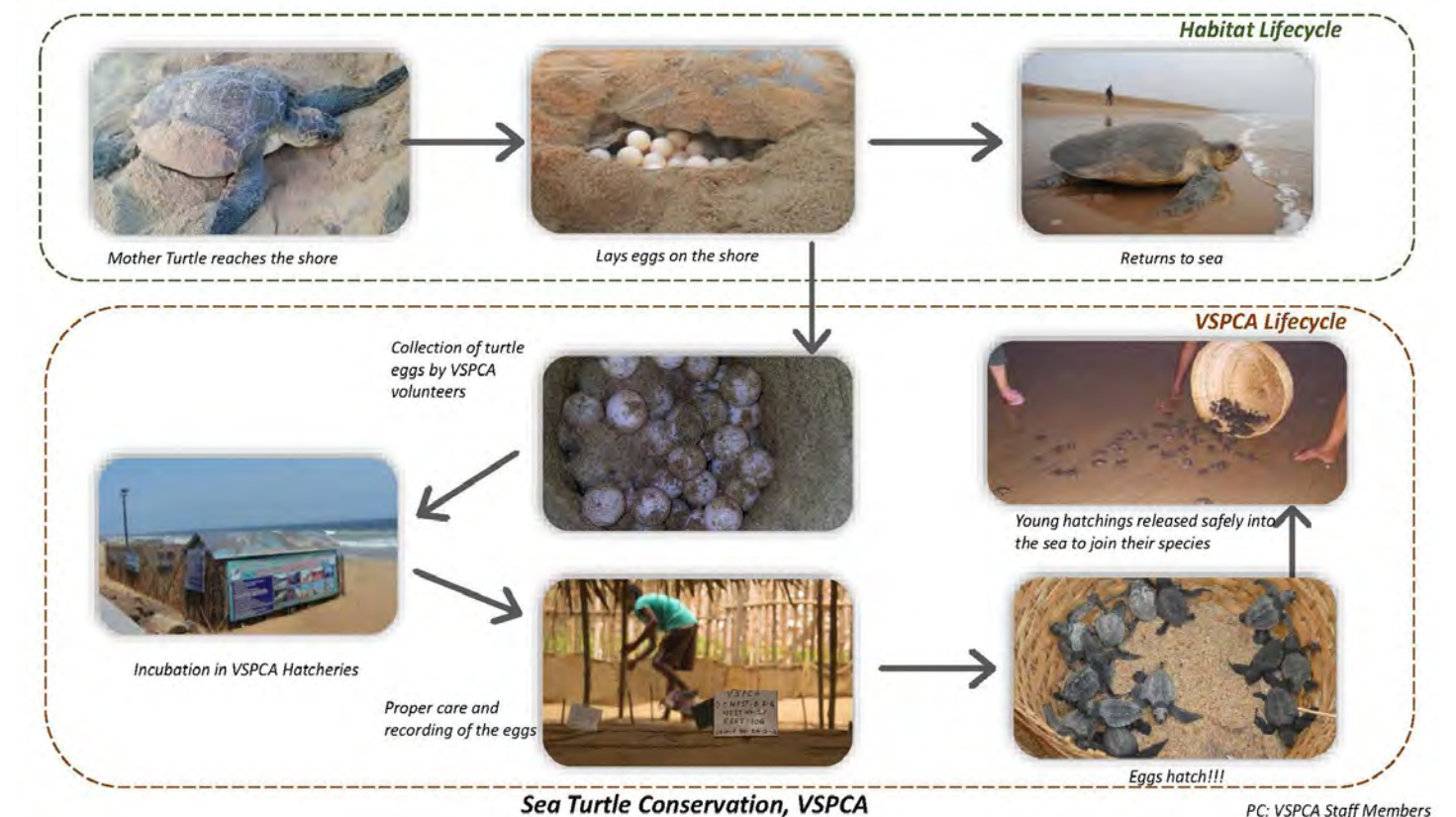
Educating the fisher community about the [Indian Wildlife](#)

[Protection Act \(1972\)](#), the [IUCN Red List](#) concerning sea turtles species in this region and the [threats to the olive ridley](#) explained the law and facts in a manner that the fisher community understood. VSPCA explained the status of the sea turtle in terms of its capture and endangerment, and the consequences to the fisher community from legal and livelihood-resources points-of-view. These strategies and tactics exposed intentional and unintentional missteps in the city in terms of the infliction of long-term damage to the habitat and local communities

About How Nature Informs Us About What Matters in the Long Term

Odisha, the adjacent state along Andhra Pradesh's coastline, is home to one of India's largest sea turtle rookeries. Each night during turtle season, one observes the magical mass nestings or "morrimas," "arribazones" and "arribada" (Tripathy 2003). On consecutive nights, Pradeep observed turtles laying eggs over already-built nests at the Rushikulya rookery in Odisha. Over the years, several hundred turtles have made their way to Visakhapatnam in what are understood as [emergency or sporadic nestings](#). With the steady increase of nestings by at least twenty percent since 2016, Visakhapatnam seems the likely fallback for sea turtles from Odisha and is growing into a bigger sea turtle rookery for sporadic nestings.

Over the last two years, Pradeep has observed juvenile mother turtles coming ashore and laying smaller clutches of eggs. Could this be mother nature's warning as Charles Darwin has explained: Nature's attempt to maintain a balance of species evenness in terms of sea turtle populations? We must pay heed and investigate unusual observations



and prepare to mitigate human activity that is negatively disruptive to life.

WHY THIS METHOD WORKS FOR ALL?

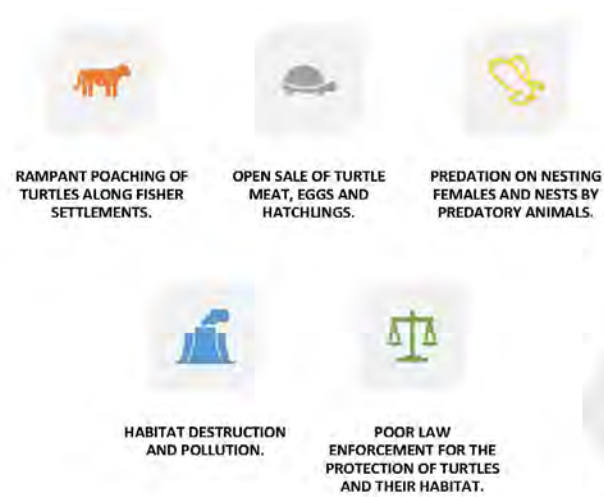
VSPCA's Sea Turtle Conservation program forges **harmony** between NGOs, fisher communities, and community dogs, while addressing the

combined needs of all involved.

The fisher community are animal loving people. Their beloved dogs and cats forage at fish markets. [Birds](#) such as the red crested pochard, great crested grebe, ruddy shelducks, ibis and painted storks, egrets and cranes throng the coastline, port and fish markets arenas. There is an alliance between human

and non-human living beings that VSPCA is privy to. VSPCA's offerings of vet care, treatment and animal birth control encourage coastal communities' observance of VSPCA's principles around "Community Animals."

VSPCA sees every animal in the city as a resident of the city. Every animal in the city's ecosystem is core to VSPCA's programs. All



Trends Prior to Conservation

street animals are taken in for animal birth control, treatments, vaccinations and returned to their communities with assured provision of food, water and treatment for injury. Migratory birds undergoing exhaustion and rehabilitation, are very much part of the city's ecosystem needing such assistance. Working with migratory birds brings VSPCA to mangrove protection and evolving understanding of estuarine and deltaic species. Every street *and* visiting animal in the city thereby, becomes a *community animal* in VSPCA's

Programs. By controlling street animal populations, VSPCA is working steadily toward public health, safety and welfare, via animal welfare. By working on human-animal conflict in the forests, efforts are being made to reduce zoonotic disease transmission. Therefore, community animals neither menace nor nuisance, are looked upon as important entities in biophilic ecosystems.

In doing so, the protected and cared for beach/street dogs – curious participants of the

sea turtle conservation goes on – began understanding and imitating human actions. They are community pets who have adopted VSPCA's programs. They bark to announce the arrival of gravid (or injured) mother turtles – often after the city has gone to sleep. They keep predators away from egg-laying (or injured) turtles. Importantly, they do not predate on the sea turtle eggs! This feature makes VSPCA's program more successful than originally anticipated; as in most sea turtle conservation efforts along India's coastline,



The City Community Matters

street dogs are the primary predators of sea turtle eggs.

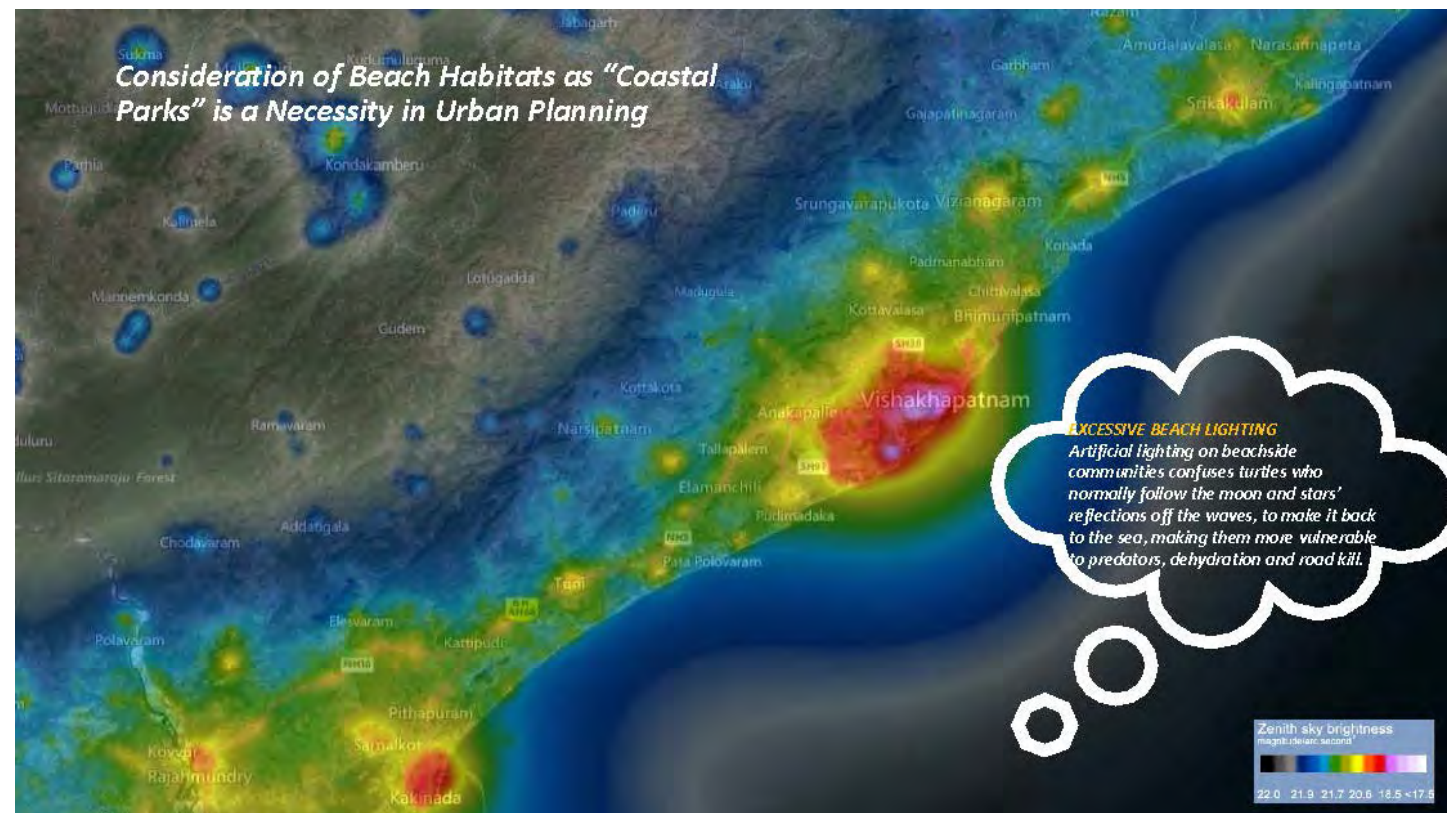
Community Animals become a city's assets when protected and cared for; especially dogs. A dog is a human's best friend and proves it time and time again in service to the human. Once dogs invest in humans, it is forever. VSPCA has evolved its principles around this trait of the dog.

The fishermen obtain employment in VSPCA's sea turtle conservation efforts. In turtle season, this provides them

with an alternative livelihood: building the ex-situ sea turtle hatcheries, collecting the eggs, protecting them, feeding and caring for the dogs involved, and releasing the turtle hatchlings safely to the ocean. Today, they are paid by the Forest Department of Andhra Pradesh. These communities have a lot to offer to the science of conservation: their culture, knowledge, love for the environment, and networks (a precious resource in conservation efforts). There is always an opportunity for a win-win in

engaging with local communities. Besides having access to more resources, the program can put forth the value of their culture and common heritage for all the city's residents. Involving the fisher communities is an important approach toward greater equity in science research and data.

Community animal protection and working closely with fishing communities can evolve comprehensive programs in conservation. In about the 11th year of VSPCA's Sea Conservation





Original Turtle Habitat
Image Credits: VSPCA

the Forest Department observed the progress and joined forces with VSPCA to pay the fisher people and support the construction of ex-situ hatcheries. This was a big win for the community. *The program is built as agile and inclusive!* NGOs from far and wide support this effort today. Now the time has come to advocate for sea turtle habitat conservation in terms of addressing the impacts from sewage, oil, chemical and garbage pollution by the big pharma, industry, government and people themselves.

In summing up VSPCA's approach: cultural knowledge and animal knowledge enrich scientific

knowledge. Augmenting this knowledge with science can foster greater scientific thinking. By fostering harmony, we can demonstrate Donna Haraway's concepts of "making kin" and growing ourselves by "addition." The fishing community is empowered and so is modern scientific thinking by way of community and animal engagement. What has come together is more than the understanding and importance of the sea turtle: it is a deeper understanding of the magnificent ocean, its tides and seasons, its many species who cohabitate on- and off-shore and the value of it all for the fishing communities and the residents of the city of

Visakhapatnam.

Living and Dying with Care

In 2020 across the planet, there was greater suffering, in living and dying. As migrants flee oppressive regimes feeling forced out of their homes, we wonder how species "feel" as they are forced out of their natural territories, or forced to adapt to new ways of living? Ecological devastation and social upheaval amongst fauna and humans reveal connections. VSPCA's work in sea turtle conservation is not the largest conservation effort by any means; however, it is a unique attempt at giving (human and non-human) individuals the

chance to live and die within the care of one another.

As is the sea turtle, so is the community dog; as is the city school girl, so is the fisher child; as is the indigenous tribeswoman, so is a homeless man; as is the migratory painted stork, so is the purple sunbird; and as is the yellow fiddler crab, so is the whale shark.

Can we shape programs to be inclusive so that every individual is able to live in peace and go onward with care?

Cities are key living spaces for the greatest number of humans

on the planet. We may put great effort into conserving species in wild places, but as cities burgeon with more humans, we put all other species and habitats under great pressure risking life everywhere. Therefore, at VSPCA, we focus on creating conservation systems from *within* the city.

Our task at hand is to raise awareness about conservation through community animals and human and animal culture. Protecting individual animals leads to animal welfare, which engages the community in an exploration of interconnected

ecosystems to evolve a science-based approach and method for conservation.

Pradeep Kumar Nath is Founder and President of Visakha Society for the Protection and Care of Animals, India.

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Krti Tallam (Stanford University, Biosciences), and Athithya S Loganathan and Sai Ganesh Veeravalli (University of Twente, Faculty of Geo-information Science and Earth Observation) are Advisory Board members with VSPCA USA.



City Encroaching on Beach
Image Credit: VSPCA

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Sea turtle hatchling release
Image: VSPCA



Mr. Narayan Rao, VSPCA's Sea Turtle Warrior who worked with VSPCA for 40 years, passed away from CoVid-19, seen playing with the sea turtle dogs.
Image: VSPCA



Sea turtle protection dog announcing the fact that an injured turtle is ashore. Bird predators tend keeping away when the dogs are on watch.
Image: VSPCA



Resilience by the Bay: Norfolk’s Biophilic Strategies

By Hank Morrison and Chris Whitney, Norfolk City Planning

Resilience isn’t a new concept for Norfolk, Virginia, a port city on the East Coast of the United States and home to the world’s largest naval base. For nearly 400 years, our coastal city has faced wars, outbreaks of disease, hurricanes, and flooding, but has consistently recovered and evolved to meet the next set of

challenges. Norfolk, like most places, has been hit hard by the COVID-19 pandemic. However, the city, along with many community partners throughout Norfolk, has continued working on exciting and innovative projects that improve the built and natural environment.

In early 2020, the city and its award-winning partner design firm, Work Program Architects, created the [Open Norfolk](#) program. This community assistance program has helped local businesses open safely under Virginia Governor Ralph Northam’s COVID-19 guidelines and has filled neighborhoods’

need for outdoor programming by activating community spaces to create safe places for families and community members to gather. Three Neighborhood Spots were created in Five Points, Broad Creek, and the NEON Arts District that provide pop-up programming like food trucks, outdoor exercise classes, fresh food giveaways, and small business markets to allow for safe outdoor recreation and socializing. An additional spot was launched in conjunction with Teens with A Purpose, a local non-profit youth empowerment

organization. In all instances, the community organizations and leaders helped with the construction and management of the sites.

The [Elizabeth River Trail](#) stretches 10.5 miles along Norfolk’s waterfront, weaves through 28 neighborhoods and provides opportunities for residents and visitors to enjoy urban nature at any time of the year. After a very successful fundraising campaign, there have been substantial improvements to the amenities along the

trail including 12 new ADA-accessible access points, native plant gardens, bicycle repair stations, playgrounds, kayak launches, fitness equipment, and public art. These improvements are helping to transform the Elizabeth River Trail into an asset that increases environmental awareness, improves neighborhood connectivity, and provides innovative economic development opportunities for Norfolk.

On November 19, 2020 [Governor Northam made a](#)



Norfolk City Hall
Photo Credit: City of Norfolk

historic announcement: the Elizabeth River is the second tributary of the Chesapeake Bay in Virginia (only behind the Lafayette River, also located in Norfolk and a tributary to the Elizabeth River) to meet oyster habitat restoration goals. Due to pollution, overfishing, and disease, local oyster populations collapsed during the Twentieth Century, which created issues throughout the Chesapeake Bay and particularly waterways in Norfolk. However, thanks to the efforts of the Virginia Marine Resources Commission, Chesapeake Bay Foundation, Elizabeth River Project, Hampton Roads Sanitation District, the cities of Norfolk and Chesapeake,

and local homeowners and organizations, 24 acres of oyster reefs have been restored along the Eastern Branch of the Elizabeth River. This exciting new development is important because not only do oysters filter water, they also create habitat for marine animals and plants. This improves water quality and increases biodiversity, something that is very important for a city like Norfolk.

Norfolk has been recognized as a Tree City by the Arbor Day Foundation (Tree City USA) and its neighborhoods have extensive trees and flowers. It is also home to the Norfolk Botanical Garden, which includes 175 beautiful

acres, 7 miles of paved paths, and another 7 miles of unpaved paths to explore. It is surrounded by water on three sides and is one of the only gardens in the country that you can visit by foot, by boat, by tram, and on occasion, by bike. The City of Norfolk administers its Celebrate Trees Project, an environmental initiative designed as a community partnership that gives residents and businesses a reason to celebrate and grow Norfolk's tree canopy. The program was inspired by a tree-planting program in Norfolk's sister city, Kitakyushu, Japan. In the coming years, Norfolk's goal is to increase the tree canopy from 23% to 30%, the

recommended percentage for cities east of the Mississippi River.

There are many other interesting and exciting things happening in Norfolk. The redevelopment of the St. Paul's neighborhood will continue to transform downtown Norfolk by providing much needed affordable housing, walkable neighborhoods, and natural flood protection by daylighting portions of Ohio Creek, planned as an amenity-packed Blue-Greenway. New additions to the city's Green Infrastructure Plan emphasize habitat protection and actions to protect endangered species, and the Zoning Ordinance continues to be updated to include biophilic and resilience principles such as open space, native plants, tree protection, reducing flood risk, and alternative energy. Norfolk has always been a resilient city populated

by resilient residents and will continue to find innovative ways to meet new challenges.

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Elizabeth River Trail
Photo Credit: City of Norfolk



View of Cape Town from Signal Hill
Photo Credit: Tim Johnson

Cape Town, A Coastal African City

By Camila Coogan Budden, [Biophilic Design by Kugan](#)

Cape Town has been rated the best city in the world seven years in a row by readers of the U.K. based, Daily Telegraph. It is best known for Table Mountain National Park nestled right in the middle of the city and running along the coast to Cape Point Reserve. Besides its stunning inland nature, located at the southern tip of the continent, the city is also hugged by the Indian and Atlantic Oceans and is known internationally for its rich biodiversity and stunning marine, coastal and inland nature. Cape Town is also a city with a raw and socially unjust history. Therefore, the health of communities and opportunities to enjoy blue and green spaces for all socio-economic groups is as important as individual well-being and healthy eco-systems. Blue Space as Contribution to Health and Well-being

Instinctively humans are drawn to being in nature and close

to natural systems. If you think about a happy, calming place or a destination where most people like to spend their vacations, more likely than not it is by the seaside or near a big green space such as mountains. Anecdotally, one could say that being in and near nature is good for us. However, there is formal research to prove that green spaces such as forests, savannah and blue spaces, such as rivers and the ocean, are good for our physical and mental well-being. (Roe et al. 2019). Time in nature also fosters environmental stewardship and provides a way for people to get relief from socio-economic stressors. (Ewert et al. 2005).

As marine biologist J. Nichols documents in Blue Mind, blue space has a strong positive effect on our physical and mental well-being. (Nichols 2014). Nichols relates that a 2013 mappiness study showed that the highest increase in happiness in an

outdoor environment occurred when people were near water, and that being in marine and coastal regions added 5.2% to a person's happiness. Time and time again researchers have found that proximity to water strengthens the positive effects that the environment has on well-being. A study of people in Ireland found that people living within 5 kilometers of the coast enjoyed higher life satisfaction and living within 2 kilometers of the coast strengthened the effect. (Brereton et al. 2008). A University of Essex team researching outdoor activities in the U.K. discovered that while every green environment had a positive effect on both self-esteem and mood, habitats with open water produced a significantly larger degree of improvement. (Barton and Pretty 2010). We are happier in natural settings, and even though green spaces have many benefits for our health if you add in proximity

to water this enhances both self-esteem and mood more than just access to green space alone.

Blue space also activates a reward response in an area of the brain rich in opioid receptors that triggers feelings of wellness. Therefore, we actively seek it out and put value on it. A good example of this is the increased real estate value of properties on beachfronts and with sea views. The European Centre for Environment and Human Health in the UK is dedicated to exploring how natural environments can help to promote human health and well-being. In 2010, researchers associated with the centre investigated how the inclusion of water elements in natural and built environments affected people's preferences and emotions as well as the sense of restorativeness. The participants

viewed 120 photographs of natural and built scenes half of which had some kind of water in them and were asked questions about the appeal of the scene and their willingness to visit the place and how the image made them feel. The research showed that both natural and urban scenes containing water rated more positively with higher preferences, more positive emotions, and greater perceived restorativeness than those without water. (White et al. 2010). Interestingly, built structures near water, for example houses on a canal, were rated as positively as green space.

Along with psychological benefits, come physical benefits as well. As Nichols relates in Blue Mind, a study of Australians in New South Wales showed that those who lived in a postal code on the coast were 27%

more likely than the rest of the population to report activity levels that were adequate for healthy adults and 38% more likely to report vigorous levels of activity than the inland dwellers. (Bauman et al. 1999). In England, over 35% of all coastal visits were found to be made by people who live within 5 miles of the coast (Wheeler et al. 2012). Thus, coastal communities may attain better physical health due to the stress-reducing value of greater leisure time spent near the sea.

Cape Town's Blue and Green Biophilic Spaces

Biophilic design within Cape Town is best demonstrated with the city's many examples of bio-cultural assemblages that have attracted people to enjoy and value them for generations. Within Cape Town, we have fourteen man-made tidal pools



Silhouette camps bay city beach
Photo by Dan Grinwis



Tidal Pool at Camps Bay
Photo by Dan Grinwis

scattered along the coast of Cape Town that are perfect examples of ocean-related bio-cultural assemblages. They have attracted locals and tourists to enjoy the protected pools in the intertidal zones safe from the constant movement of the ocean (minus a few waves hitting the ocean-facing wall at high tide). They are not only enjoyed for their sheltered swimming conditions but also for the small wildlife that inhabit the pools. Kids and adults alike snorkel around the pools spotting little ocean creatures that take refuge in these pools. [A local group of tidal pool users](#) started documenting the wildlife found in the pools and realised that these pools are also safe havens for a lot of species to breed and live. They also realised that the local municipality, whose cleaning methods used environmentally damaging chemicals, were unaware of the biological value

of these tidal pools. As a group of citizens, they approached the municipality with a list of species found in the pool and photographs taken of them. Through volunteering their time and working patiently and methodically with the municipality, they have now assisted with changing the cleaning techniques to the use of a high-pressure hose with no chemicals, keeping the eco-system in the pools safe. These tidal pools are a perfect example of biophilic design where a man-made design is aiding biodiversity and healthy ecosystems while providing cultural importance and space that aids in human well-being and connection. This fosters a love and connection with the ocean and its ecosystem at the same time.

Cape Town is an iconic illustration of a biophilic city

hugged by green and blue space. This promotes not only the mental and physical well-being of people but fosters environmental stewardship as well as it allows people from poorer socio-economic backgrounds [an opportunity to escape harsh social realities](#) such as poverty, gangsterism or violence, even if just momentarily.

Besides inspiring a love for the ocean and stewardship of it, many of the organisations are using the ocean as a medium to take people, especially youth, out of the lower-income areas of Cape Town, namely the “Cape Flats”, that are known for gangsterism, violent crime, and drug usage, and showing them a different reality with the opportunity to be immersed in nature safely facilitated by inspiring role models. A project that is doing a great job at this



Hout Bay View
Photo by Tim Johnson

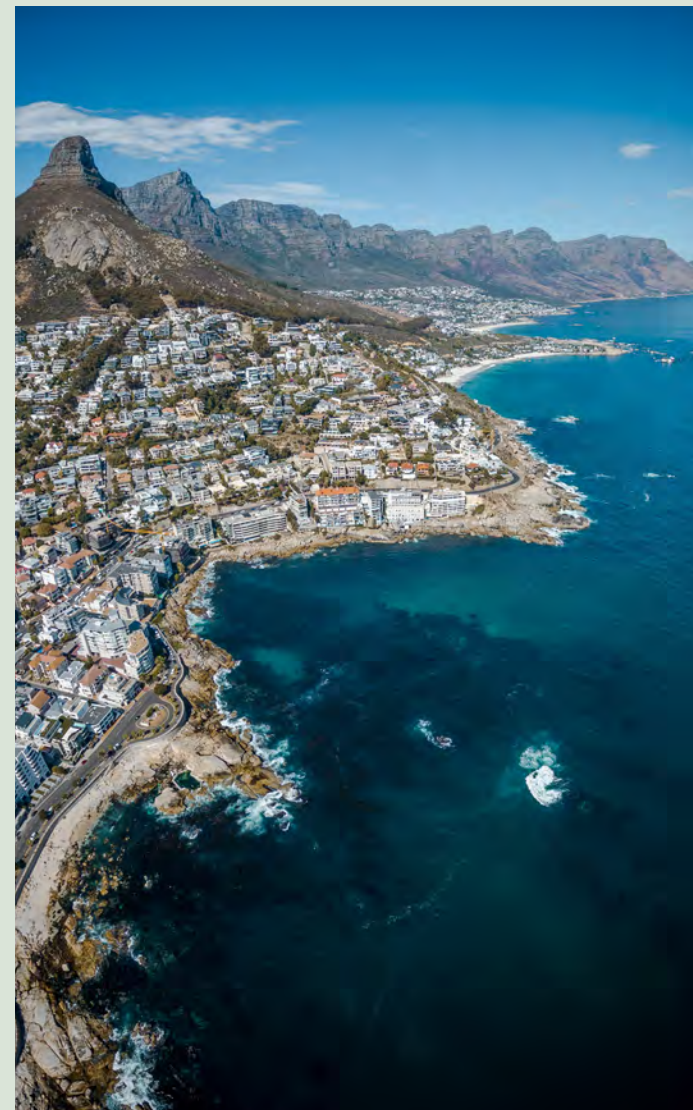
is the [9 Miles Project](#), founded by Nigel Savel along with his wife Sher'Neil. Savel says the project's vision is to improve his community in the Cape Flats through surfing and the important life skills it taught him, such as discipline and determination. Another emerging leader from the Cape Flats, finding refuge and meaning in the ocean, is Shamier Magmoet, one of the founders of an organization called [Sea the Bigger Picture](#). He highlights that spending time underwater shuts out the urban noise and gives him perspective on what really matters. He is passionate

about and runs the youth program "Defenders of the Blue" that teaches youth about coastal ecology and what every individual can do to mitigate the effects of pollution.

Author Richard Louv expresses that sustainable happiness and custodianship come from consistent interaction with a place. The endless list of organisations and individuals that have been inspired to share what helps them and what they love proves that consistent immersion in nature, in this case the ocean, fosters a deep relationship to place, a desire to

share it, protect it and retreat to it for clarity and comfort as well as for community. It is said water heals the mind or, more accurately for Cape Town, the ocean is healing society. So, next time you need some reprieve from urban life and the ocean is far away, pick up a shell and put its cavity to your ear or put some earphones in and listen to a meditation track of the sounds of the ocean and notice how it makes you feel. You will be surprised by the sense of calm that flows through you.

There are numerous organizations working in Cape Town that have been founded by local citizens who love and appreciate the ocean and understand its value for a healthy society. Below are a selected few from a long list, each working to inspire connection and protection of the ocean for social and environmental well-being.

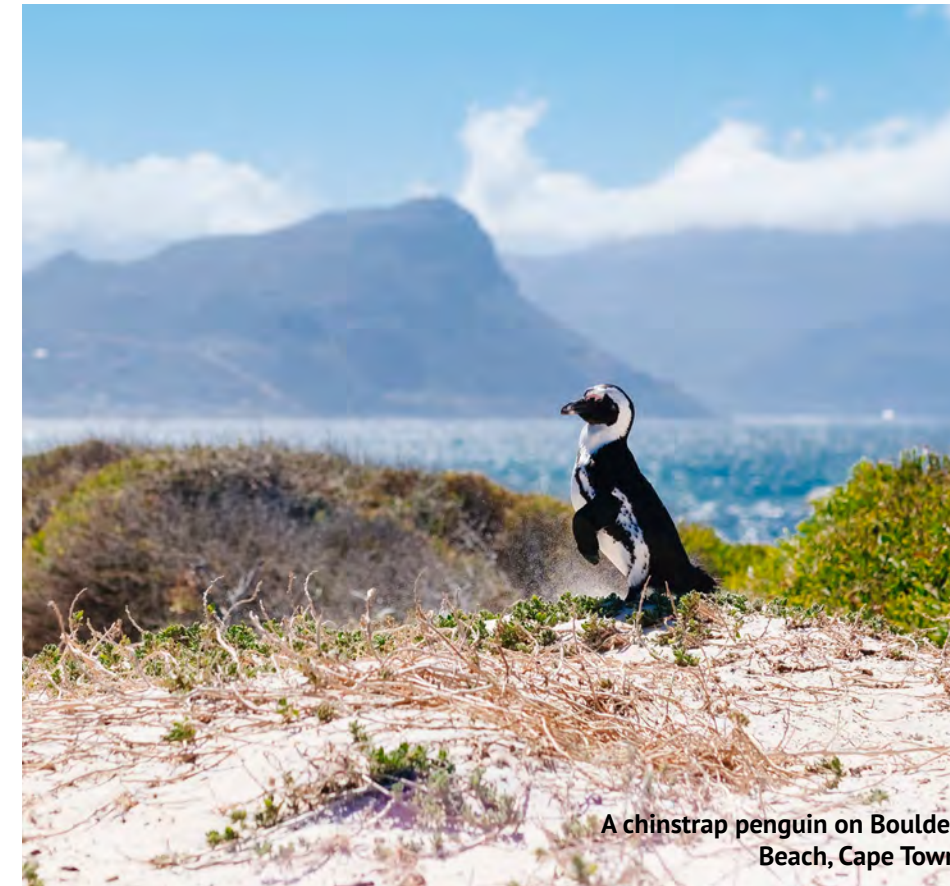


Inspire and Protect

[The Beach Co-op](#) is an organisation started by a local surfer, conservationist and mom of three young boys, Aaniyah Omdien, who wanted to do something to give back to the ocean she loved so much. She started with beach clean-ups on the rocky shore near her local surf break. Now her organisation, led by women in the community, focuses on empowering coastal communities as keepers of oceans and organises beach cleanups to keep South Africa's beaches clean and healthy.

[The I am Water Foundation](#) founded by Freediver Hanli Prinsloo has the motto, "you protect what you love" which they use to drive their vision. They promote ocean conservation through human experience by facilitating immersive workshops in the rockpools and on the beach for school kids. Many of these kids live 10 kilometers from the ocean but have never experienced or learned about what lies beneath the surface of the water.

[The Seachange Project](#) is a group of scientists, journalists, storytellers and filmmakers that aim to connect people to the Great African Sea Forest, as they call it. The intention of their work is to motivate scientists, policymakers and individuals to engage meaningfully with nature and protect our oceans. Through their images, films and book they have inspired and educated many locals on what sea life inhabits our kelp forests and have encouraged curiosity and wonder resulting in many more people exploring and diving on our coastline.



A chinstrap penguin on Boulder Beach, Cape Town

Camila Coogan Budden is a Biophilic Designer based in Cape Town. She has a Masters in Sustainable Development Management and Planning. Her vision is to work with professionals in the environmental and built environment space to design functional spaces that support biodiversity as well as create opportunities for authentic connection between humans and the natural world.

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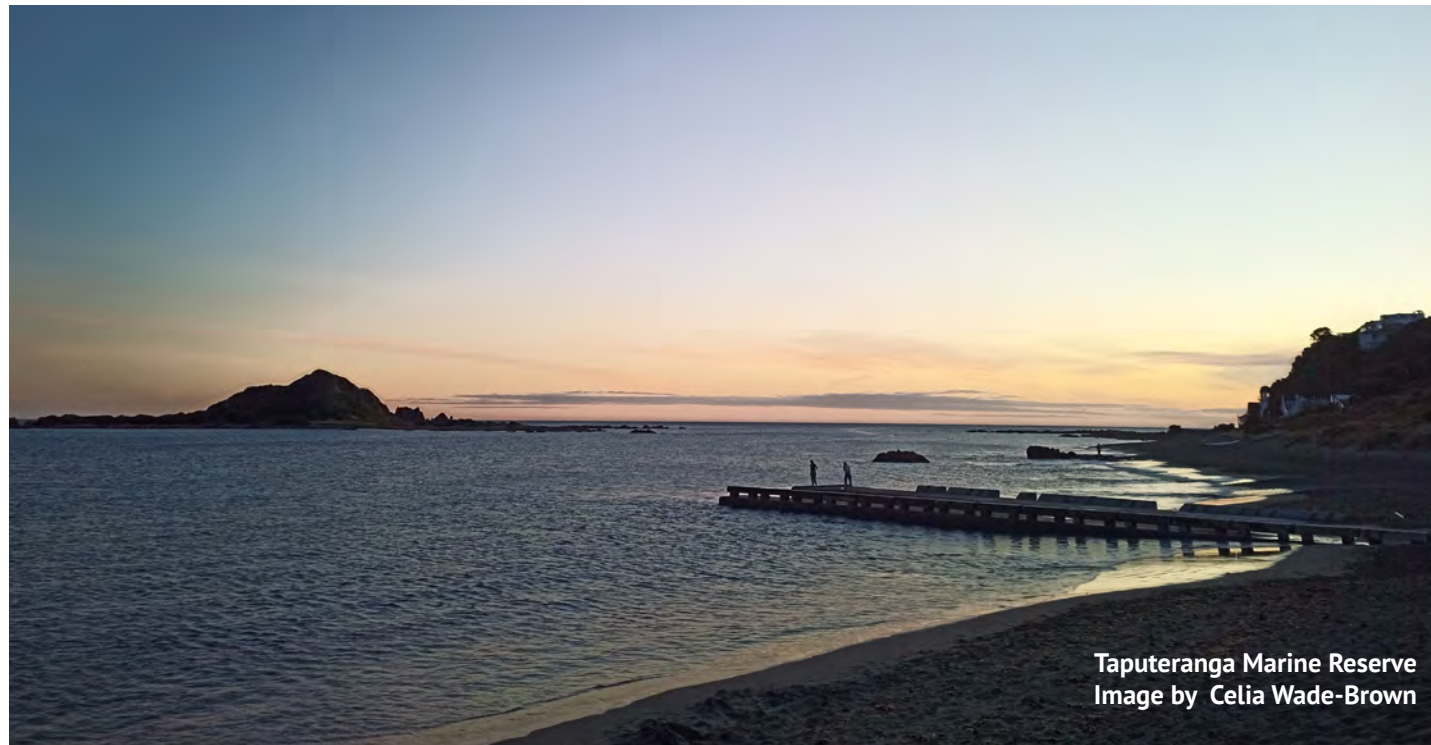
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Taputeranga Marine Reserve
Image by Celia Wade-Brown

Blue Wellington By Celia Wade-Brown

Humans are attracted to waterfront properties, seaside holidays, ocean views, swimming and water sports although no other ape likes water at all. Economic reasons also led to cities on coasts – especially food supply and transport. Sixty percent of the world’s population lives in coastal areas. Sixty-five percent of cities above 2.5 million inhabitants are located along the world’s coasts, including megacities like London, New York, Shanghai, Accra, Rio de Janeiro, Mumbai and smaller cities like Wellington, the capital of New Zealand.

Inundation from sea level rise and greater storm intensity are already yesterday’s news. Their frequency may increase by a [factor of 100 in the coming century](#). There are existing threats like tsunami, land slips

and subsidence that climate change will exacerbate. These are all reasons why we must do everything possible to mitigate climate change and keep the global average temperature increase to less than 2 °C (3.6 °F) and pursue efforts to keep it to 1.5 °C (2.7 °F).

Moving from global to the local: what are the “blue issues” that Wellington has faced and how does our built/sea interface work? Sea level rise, urban growth, and stricter water quality rules challenge traditional engineering perspectives, yet they present opportunities to deliver smarter, holistic water management for a more liveable resilient city.

People originally migrated to here by sea. Māori have lived here for six or seven centuries,

arriving in their waka (canoes). According to Māori tradition, Whatonga, a chief of the Kurahaupo waka, was the first person to settle the lands at the southern end of the North Island, known as Te Upoko-o-te-Ika – “the head of the fish”. European settlers came on sailing ships in the 1840s and Wellington was designated the capital in 1865.

Wellington is a hilly peninsular city with a magnificent harbour and a rugged coastline facing one of the wildest stretches of ocean in the world – the Cook Strait. Settlement and transport patterns were constrained by this topography as roads and rail squeezed between hills and sea. This has resulted in the most compact and walkable city in Australasia.

In 1855, a dramatic 8.2

magnitude earthquake uplifted the coast by 1.5 metres, creating land for more settlement and a narrow strip around the harbour where road and rail now run. Brass markers show where the shoreline once was in the city. We’ve had more earthquakes this century, much milder than the Christchurch disaster in 2011. Centreport’s three major commercial buildings all had to be demolished after liquefaction including the most recent 2009 BNZ building once worth \$95 million. The commercial buildings had been controversial as they were a form of “commercial office sprawl” drawing workers away from the amenities of the compact city centre. Earthquakes have likely caused considerable damage to our underground infrastructure too.

Case Study – Great Harbour Way, Te Aranui o Pōneke

Most of Wellington’s harbour edge is in public ownership. Port infrastructure prevented access to downtown. Since container shipping changed dockside practice in the 1970s, the old warehouses were strengthened and transformed into apartments, museums and galleries. Now the inner-city waterfront is most people’s favourite place to walk. Increasing usage has its own problems with pinch spots causing some friction between walkers, runners, e-scooterers, cyclists and e-cyclists.

A little further north, the commercial port blocks access. Ten kilometres more, the state highway was widened almost a century ago, completely wiping out the final 1,500 metres of

a poor-quality pathway on the wrong side of the railway line. The tremendous news is that due to agreements between local government and Waka Kotahi, the NZ Transport agency, an excellent seaside path is being fast-tracked. What persuaded the Transport Agency to invest tens of millions and do a proper job? It was not the lack of walking access nor unsafe cycling provisions nor concern about emissions and wellbeing, although these matters now figure into government policy thanks to Labour and the Greens. It was the storms, projected sea level rise and tsunami threats to the vital rail and road lines; so, resilience won the day. Soon the 72km path will welcome commuters and tourists to revel in active healthy travel along all or part of Wellington’s spectacular harbour and coast.



Wellington Harbour
Image Credit: Wellington City Council

Case study – Taputeranga Marine Reserve

Located on Wellington’s south coast, the marine reserve has just enjoyed its tenth birthday. This is where I learnt to scuba dive in 2005. Sea-life in the marine reserve has burgeoned and the reserve is becoming increasingly popular as a destination for snorkellers, divers and people exploring the rock pools. It is also an important scientific and educational resource. Octopus, fish and stingrays have all increased in size and numbers. The kōura (crayfish) even behave differently, walking in clear sight rather than hiding within the cracks of the rocky reefs.

Taputeranga was the site of the world’s first Marine Bioblitz just before the reserve was gazetted and we found completely new species of diatom and nudibranch.

Orca and dolphins inspire kayakers, paddleboarders and walkers, both on the wilder south coast and right in the central harbour. One week the Interislander Ferry was delayed for hours from docking because a rare southern right whale, named Matariki after the star cluster that heralds Māori New Year, was frolicking near the docks.

The Future of Integrated Planning

Coastal cities have treated our oceans as liquid landfills and open sewers for centuries. These harmful impacts are combined with the multitude of threats to our oceans, such as industrial overfishing, excessive pollution and waste, and the severe impacts of climate change. Human and urban activities generate contaminants, which have increased in

step with population growth. Traditional piped stormwater networks efficiently move these contaminants to aquatic receiving environments.

Conventional stormwater management has traditionally focused on flood risk management. Urban development needs and flood issues have been dealt with by building pipes and burying streams and wetlands underground. However, pipes can disconnect communities from their natural environment, adversely affect biodiversity, and offend cultural values. They are also expensive to build and maintain. Māori usage of Wellington’s seven urban streams for different purposes was obliterated but is now acknowledged. Both [Waimapihi](#) and [Kumutoto](#) now have some recognition.



Crayfish
Image by Celia Wade-Brown

2015 Long Term Plan

The city’s biggest infrastructure asset is one that is rarely seen. It lies out of sight, underground. There, more than 2,700 kilometres of pipes and tunnels criss-cross the city, carrying water to homes, businesses, schools and hospitals, or carrying sewage to treatment plants or stormwater to the sea. Together, this network and associated assets are valued at around \$1.3 billion. Lay all of the pipes end to end and they would reach Sydney. Managing these assets is one of the biggest areas of the Council’s activity and each year we spend more than \$50 million to operate the city’s water, wastewater and stormwater networks and we invest more than \$25 million in new or upgraded assets. Through better management of these assets, we anticipate that we can make significant savings over the next few years, while maintaining service levels.

We will also focus on new urban growth in areas where existing water and stormwater networks already have enough capacity to deal with added demand.

Every year, millions of litres of stormwater are discharged into the city’s streams, harbour and coastal waters. That stormwater can contain contaminants, such as oils, paints, detergents, litter, animal droppings, and after heavy rainfall, sewage. The environmental impacts of stormwater runoff are monitored, and generally comply with resource consents and environmental standards.

In the next three years, we will introduce real-time monitoring of the stormwater network. This will enable us to measure flows of stormwater and pollutants into waterways, and allow us to manage flows when stormwater is causing environmental harm.

The city’s stormwater discharges have historically been contaminated with sewage as a result of interconnected sewers and storm drains because of historic design, current illegal cross connections, leaky joints, or old cracked pipes. While significant investment has been made in sewer management, recent data show contaminants above guidelines for aquatic life, and during storms drainage systems are inundated causing flooding and sewage overflows to the harbour. The wet weather overflow from the main trunk sewer and the faecal content at the outfalls remain at levels which are a concern for public health.

Wellington’s wastewater and stormwater systems have not fared well over the years since the first brick culverts diverted the city’s streams.

In 2012, Wellington’s Long Term Plan stated, “The city’s wastewater infrastructure is in good condition, and overflows of untreated wastewater into the environment are rare.” How wrong this staff assessment was! In 2020, Water NZ has reported that around a third of Wellington’s wastewater pipes are in poor or very poor condition. Billions of dollars are now needed to be spent in the short term to fix the problem. Many councils in

New Zealand are faced with politically unpalatable budgets to maintain, renew and upgrade old systems to match population, legislation and community expectations. Infrastructure upgrades are critical to ensuring the wastewater and stormwater networks protect public and environmental health, but these works will come at high cost. It will take time and considerable investment to fix the issues. Wellington is now far more aware of its connections to the marine world. Locally councils are beginning to look at the impacts on marine environments in their plans and visions for the future in such a way that the city environment becomes more

liveable and resilient. Only in 1998 did Wellington begin to treat rather than just sieve its wastewater.

Individual action will help, such as not using wet-wipes, keeping fat out of the wastewater system, not washing paint down drains, modest water usage, and ensuring any new plumbing correctly connects rainwater to the stormwater system and sewage to the sewage system.

Community-scale action, such as beach clean-ups, diving clean-ups and coastal planting, make a significant difference as well. However, central and local government will have to do far more.

Wellington City Council's water-sensitive urban development guidelines must move from

advisory to mandatory for new developments and retrofits. Decades of unofficial cross-connections, poor materials for pipes such as brick and asbestos that are vulnerable to earthquakes, rising sea levels and poorly maintained old landfills are all coming home to roost.

I'm delighted our current Minister Nanaia Mahuta is driving the most transformative and necessary reform of how our three waters are delivered and regulated in 30 years. Offering participating councils a stimulus package of \$761 million for immediate repairs, maintenance and renewals has been an effective strategy. With the first reading of the Water Services Bill in December 2020 Central Government has taken a decisive step towards ensuring safe drinking water and more efficient

wastewater and stormwater networks. Minister Mahuta has emphasised Māori knowledge and nature-based solutions will have a big part to play.

Climate change, specifically more extreme storms and sea level rise, adds hugely to the difficulties of cities improving the health of their blue belts. As well as specific action, policy and funding for the three waters, all levels of individual, community, business, local and central governments need to make dramatic cuts to emissions across all sectors. As the proverb says "He waka eke noa" –we are all in this canoe together.



Waka on Wellington Harbour
Image Credit: Wellington City Council

Celia Wade-Brown was Mayor of Wellington from 2010 – 2016 and previously held the Environment Portfolio as a Councillor. She is currently the Biodiversity Manager at Duntulm Carbon Farm, Wairarapa, Aotearoa New Zealand; propagating native plants, sequestering carbon and removing invasive predators. Ms Wade-Brown is an Advisory Board Member for the Biophilic Cities Network.

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Taranaki Wharf Jump Platform
Image Credit: Wellington City Council



City in a (Marine) Park: New Zealand's Hauraki Gulf Marine Park

By Tim Beatley

In August 2020, Rakitū island, in New Zealand's Hauraki Gulf, became the latest island to have fully eradicated non-native predator species. There are now more than 40 islands in the expansive Hauraki Gulf, to the west of the City of Auckland, on New Zealand's North Island, that are predator-free. Introduced mammals, including rats, stoats, and domestic cats, have had a devastating impact on New Zealand's native fauna, especially its birds. In response, in many parts of the country today, there are impressive efforts underway to restore the nature that existed before Europeans arrived. The effort to make many of the Gulf's islands predator-free is a huge success that is reversing the decimation wrought by these introduced species on New Zealand's native birds, bats and reptiles.

These unique islands have

always harbored remarkable biodiversity, and efforts to conserve and restore are not new. Little Barrier Island (Te Hauturo-o-Toi), became New Zealand's first nature preserve in 1895. It is an environment that to many visitors "looks prehistoric, like Jurassic Park," [says the co-editor of a new book about the island](#). It has also been a biological reservoir from which endangered species have been reestablished on other islands and in other parts of the country. Birds like the HiHi, Pōpokotea and Kākāpō are found here; species that are absent or threatened elsewhere. [The level of wildness and primeval nature on the island is remarkable](#) given its close proximity to Auckland, which lies only 80 kilometers away. The Gulf provides an extraordinary biological setting and context for a natureful city. The islands include species like the Tuatara, an unusually long-living

lizard-like animal, of special significance to the Maori. A recent [project sequencing the Tuatara genome](#) discovered just how different it is: not quite mammalian, not quite reptilian, and branching off on its distinct lineage some 250 million years ago.

These islands provide important breeding sites for many bird species, especially shorebirds and seabirds, that together form what has been called a seabird superhighway. The Hauraki Gulf is home to an amazing number of seabirds (some one-third of the global total). Equally impressive are the marine organisms lying under, and occasionally above, the water: from marine mammals like Bryde's Whales at the top of the food web to the finfish, cockles and plankton at the other end. The Hauraki Gulf amounts to a kind of massive bowl of abundance and diverse

life, providing a spectacular biological backdrop and context to the growing Auckland metro area.

In 2000, New Zealand took the bold step of establishing the [Hauraki Gulf Marine Park](#), giving reality to the moniker "city in a (marine) park." It is an expansive marine environment on New Zealand's North Island, encompassing the 1.8 million residents of Auckland, the country's largest urban area, as well as the Waikato metro area to the south. Established by legislation in 2000, the Hauraki Gulf Marine Park Act was in fact the first piece of New Zealand legislation adopted in the new millennium. The Act took an exemplary holistic view in delineating the marine park's boundaries: it extends seaward to cover the islands and waters of the Gulf, but also landward to include watershed catchments draining to the Gulf. In this way, the park reflects the indigenous Maori philosophy "from the mountains to the sea." In total, the park's boundaries encompass nearly 14,000 square kilometers. The Act helps the Gulf receive more explicit consideration when decisions are made through the New Zealand Resources Management Act (RMA) and Fisheries Management Act (FMA).

The preamble to the Act describes this remarkable ecosystem: "A diverse marine environment extends from the deep ocean to bays, inlets, and harbours off the coastline and the shallow sea and broad intertidal flats of the Firth of Thames" ([Hauraki Gulf Marine Park Act 2000](#)).

The Act continues: "People use the Gulf for recreation and for the sustenance of human health, well-being, and spirit. The natural amenity of the Gulf provides a sense of belonging for many New Zealanders and for them it is an essential touchstone with nature,

the natural world, and the marine environment of an island nation."

The 2000 Act also established the Hauraki Gulf Forum, a collaborative body and mechanism for managing activities in the Gulf. In 2020, the Forum published a [comprehensive assessment of the Gulf](#), reflecting on 20 years of conservation and management. A mixed picture emerges: one of management successes, to be sure, but also one of decline and degradation and of limitations to the current approach.

Alex Rogers, the Executive Officer for the Gulf Forum, spoke with me in July 2020 about the conservation and planning challenges facing the Gulf. As the State of the Gulf report shows, there have been many positive accomplishments, but also many troubling trends as well. Progress in creating predator-free islands has been a major success, and there has been significant strides in protecting wetlands and native vegetation. There has also been a steady increase, Rogers told me, in the number of people and communities directly involved in restoration and cleanup work. Other successes include a reduction in the number of Byrde's whales killed from ship strikes (a result of an agreement to reduce the speed of ships moving through the Gulf), and a reduction in the highly destructive practice of bottom-trawling.

However, significant alteration of the Gulf's ecology has also occurred. Overharvesting of crayfish (spiny lobsters) has led to overpopulation of urchins and, in turn, the decline of the kelp forests. While the Gulf has a designation as a marine park, few parks of the Gulf can be considered true marine protected areas. There has been an ongoing discussion, Rogers told me, about whether to expand conservation protections, for

instance extending the extent of the "no-take" zones. This has been resisted by the commercial fishing industry. Only about 0.3 percent of the Gulf is strictly in marine protected areas where fishing is prohibited. A 2017 marine spatial plan, called [Sea Change](#), identifies a number of recommendations for the future, and calls for additional marine protected areas.

There have been failings as well, in particular the failure to adequately invest in land-based infrastructure that will better control damaging stormwater runoff and sedimentation runoff from agriculture and forestry. A red-flag system that serves to close swimming areas when the water quality is too low has done much to raise awareness of these sources of pollution. There is, in addition, the challenge of controlling "ocean sprawl," those physical intrusions into the seascape, including coastal engineering works and structures, that are increasingly sprawling out into estuaries, harbors and oceans. Here again the picture is mixed: marinas have grown from 13 (in 2000) to 18 in 2020, but moorings have also been reduced.

Habitats have been altered along the Gulf in ways that have serious negative impacts, including on sea birds. Some of these important impacts have to do with the ways that development has changed light patterns: as the presence of cruise ships and other forms of urban development have "lit up" the night with significant negative impacts on shorebirds. "There is this sense that we are collectively making wild spaces harder to find for nature," says Alex Rogers.

I have wondered about the psychology of establishing such a large marine "park." Does the designation of these marine environments as a "park" send

the signal about the special status and uniqueness of these habitats? Yes, to some extent, says Alex Rogers. There is reverence and pride about this larger marine context, but as well for many there is difficulty in fully appreciating or grasping the park: “Often the marine area can be difficult for people to understand and know.” That is changing, Rogers says: “we’ve started referring to it as our Yellowstone, as our Great Barrier Reef.”

I asked Rogers about the extent to which Auckland residents enjoy this phenomenal outdoor marine environment. One of Auckland’s labels was “city of sails” but surprisingly fewer residents enjoy the Gulf in this way. “Boating is a luxury,” he says. Of course, it is a double-edged sword, as more people owning and using boats translates into more marine sprawl. Nevertheless, it is surprising that there is not more widespread engagement in boating and enjoyment of the Gulf in this way. Sailing and boating are not on the increase, though more residents are riding ferries to visit the islands in the Gulf.

It is such a large marine park

that visiting many parts of it, for instance Little Barrier Island, will be difficult for most. There is no ferry service here, requiring one to organize a special excursion. There is good ferry service to the nearby (and much larger) Great Barrier Island, but reaching this northwestern edge of the Gulf takes a whopping 4 ½ hour boat trip. Few will make this trip, but they will visit the many beaches and water access points that are much closer. The wild and ancient nature of these islands represent a remarkable reference point for residents of Auckland -- knowing they exist but a few kilometers away is exciting and reassuring, a mental reference point to show that it is possible to intensively use and occupy an urban landscape but to also be able to protect (and restore) a nearby part of primeval New Zealand. Just knowing such places are close by must be a delight.



The Hauraki Gulf Marine Park is an emerging story of co-management with Maori people and of acknowledging the important ways in which the philosophy and management tools used by the Maori are even more suited to the marine challenges of today. An important lesson is the value of deep connection and kinship with all things living in the Gulf. The

Maori “have always been ocean people,” Rogers tells me. Indeed,

the god of the sea, Tangaroa, is understood to be an ancestor from which all Maori have descended. That helps to change the way the marine realm is seen: “You treat something very differently if you’re related to it than if you conceive of it in a different way.”

There are some who believe that the Hauraki Gulf deserves to be granted personhood under the law, an idea that in most parts of the world remains a theoretical possibility but in [New Zealand has become a real and meaningful legal designation](#). New Zealand has led the world in applying this important idea: there is already a river (Whangahui) a mountain (Mt Taranaki), and a forest (Te Urewera) that have been given legal personhood. Interest is growing in applying personhood to blue zones, both freshwater and marine (for instance the efforts related to the [Lake Erie Bill of Rights](#)), and it may only be a matter of time before we see many ocean cities working to establish and protect these legal rights, inspired by the pioneering work and positive examples from New Zealand. There may be a time when the Hauraki Gulf could itself institute legal action to protect or restore its ecosystem and abundant life it supports (through the structure

of a guardian committee acting on its behalf), in this way advancing an even more holistic and integrative approach to caring for this remarkable living entity.

New Zealand. There may be a time when the Hauraki Gulf could itself institute legal action to protect or restore its ecosystem and abundant life it supports (through the structure of a guardian committee acting on its behalf), in this way advancing an even more holistic and integrative approach to caring for this remarkable living entity.

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An Aqua-Emerald Archipelago Park for Venice

Farrow Partners Architects (2020). Venice: The Death and Life of the Great Italian City, A Way Forward.

By Tim Beatley

Venice, Italy, is a city in the midst of considerable turmoil and change. Sea level rise and a growing risk of flooding, alongside a continual decline in its permanent population and an onslaught of daily tourists (more than 20 million now a year), bode ill for this ancient city of the sea. Still it remains a beautiful and profoundly natureful city, one that has the potential to help us model and visualize how the future could be (car-free while water and nature-dependent). Visionary Toronto architect Tye Farrow, along with other colleagues, has recently laid out a bold idea for its future that aims to address these challenges. Envisioned is a 32-kilometer long “aqua-emerald archipelago park” that would encircle the city; a linear string of parks, some existing and some to be constructed.

In a provocative report (and plan), *Venice: the Death and Life of the Great Italian City, A Way Forward*, Farrow lays out this transformative vision of a “de-central” park that would serve the multiple functions of flood control, recreation, food production, and new connections to nature. Its role as a storm barrier contrasts importantly with the multibillion dollar, and only recently functional, MOSES flood gates, that is described

in the report as a “single use infrastructure solution” (Farrow 2020 at 28). What is imagined here is “[a] set of islands with distinct, diverse, and memorable characteristics and experiences that celebrate nature, growing, change of seasons and the growing and harvesting of food in the form of an ‘edible park’” (Farrow 2020 at 48). The linear park is designed to be “porous,” allowing movement in and out by boats and pedestrian bridges that connect the islands, which serve as a barrier for storms (lowering the water levels by an estimated meter and a half!) but also guarding against the wake of cruise ships. A process of island building is illustrated in the report, utilizing hollow dredge-filled honeycomb structures with locks installed between them.

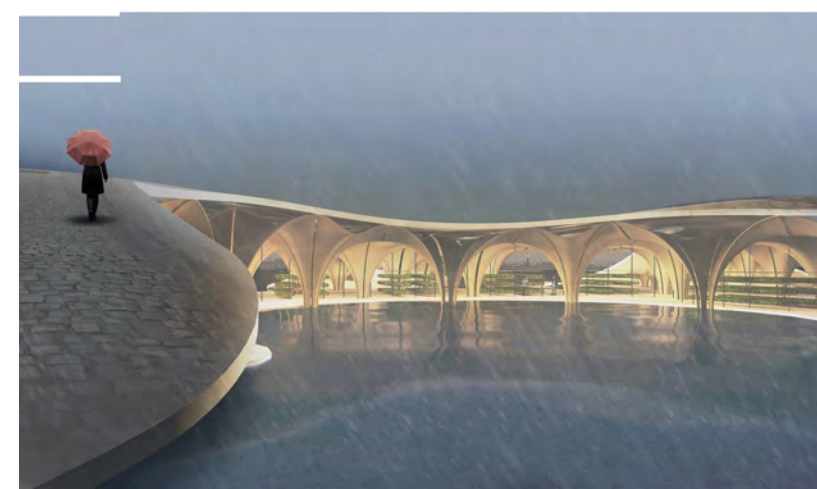
Farrow divides the park into four segments, each defined by the qualities of a season of the year. The southern segment, for instance, “takes on the characteristics of summer,” and imagines a park that includes “boardwalks, filtered swimming pools, fishing areas, lagoon promenade, boating, water bike and canoe rental areas, winter skating park [the summer segment of the park is still to be used and enjoyed in winter!], coves for water concerts and movies” (Farrow 2020 at 80).

Expansive “agri-pavillions” are imagined in each segment, with illustrative and beautiful renderings showing what might be possible; essentially serving as glasshouses for food production and for aquaculture.

The result is a vision of a circular waterfront park that is “biophilic and hortaphilic” and also lays a foundation for a future economy for the city, as well as perhaps a venue to which to steer and siphon some of the place-damaging tourism taking place in the historic core.

The benefits and rationale for such a bold project are clearly stated in this report as well as a sense of where and how this project would unfold. It is an idea at this point, not a plan, though a well-developed one, and one worthy of serious discussion.

Images from Farrow
Above: City with Proposed Park
Below (Clockwise): Spring, Summer,
Autumn and Winter Archipelago





Saving Biscayne Bay Interview with Miami-Dade’s New Chief Bay Officer, Irela Bagué

By Tim Beatley

Irela Bagué knows the ecology of South Florida well. The daughter of Cuban immigrants she remembers especially a 7th-grade field trip to the Everglades, an experience that set in motion her interest in environmental land use and a career path that has taken her to the South Florida Water Management District, the Audubon Society,

and even a run as a state government representative. Her new and challenging job is the Chief Bay Officer (CBO) for Miami-Dade County. The “bay” here refers to the Biscayne Bay, Miami’s iconic water body, an estuarine ecosystem of immense biodiversity, and a backdrop of visual beauty and a recreational playground for a

vibrant growing metro area of more than 6 million residents. It is an expansive body of water, stretching from Broward County to the Florida Keys, encompassing 428 square miles.

The bay has been struggling in recent years, however. An [18-month study by the Biscayne Bay Task Force](#), a body chaired by

Bagué that led to her new job, documented downward trends for the environmental health of the bay. Especially difficult is the challenge of water quality and controlling the extensive water pollutants entering the bay. This was highlighted in dramatic fashion in August of 2020 when a major fish kill occurred in the bay. The fish kill may have been a blessing in disguise, as it has helped to raise awareness and led to many entities now ready to help in tackling these problems.

Excessive nutrients enter the bay in several different ways. Bagué

tells me there are some 100,000 septic systems in the county, with an estimated 18,000 failing. This is a waste disposal technology especially ill-suited to South Florida’s highly permeable karst geology. And sea level rise will only exacerbate these problems as water tables rise and causing further septic tanks to fail.

A big need she says is to invest in upgrading the region’s failing infrastructure, its stormwater and wastewater collection systems, which are literally “bursting at the seams.” A regional canal system intended to reduce

flooding serves as a conduit for sending pollutants to the bay as fertilizer and other contaminants from lawns and farms are collected and flow into the Bay.

One key result of this excessive flow of nutrients has been the sharp decline in sea grasses, which in the southern portions of the bay have declined by more than 90 percent. Seagrass meadows are an important habitat for many of the aquatic organisms found in the bay, from manatees to loggerhead sea turtles, and damselfishes to dolphins.



Irela Bagué, Miami-Dade County Chief Bay Officer

Bagué’s Task Force Report has called for setting and implementing reduction goals and interim targets, and for local ordinances that would mandate best management practices leading (hopefully) to “deep reductions in pollutants.” New pilot programs are also called for as well as a new county-wide ordinance to control fertilizer runoff. Marine sources of pollutants are also addressed in the report, with a call for increased inspections of marinas and new marina-based pollutant containment structures.

In South Florida, water management is about as complex as it can get. Bagué’s key challenge is to coordinate with local governments (there are 34 cities in Dade County), as well as multiple state and federal agencies with some stake in the bay. They each have an agenda but also can help solve the problems. “They all have to be at the table,” she says, “agreeing not just to move these restoration projects forward ... but also to

help us pay for them.”

Bagué remains optimistic, and points to other cities (such as Tampa) that have been able to change direction and restore their nearshore habitats and water quality. It can be done, she believes. What is really needed, in the words of the Task Force, is “a unified and collaborative approach to watershed restoration.”

I asked Bagué about the prospect of nature-based approaches, some of which, are recommended in the Task Force Report, such as living shorelines and mangrove forests. She is not sure living shorelines may even be allowed under the current codes, something she is working on now. Much of the land along the bay’s shoreline is privately owned and expensive real estate. “Not everyone wants to grow mangroves and lose their view. So, there is a balance we have to make,” she tells me.

Views of the bay carry an economic premium, to be sure, and raise another vexing issue in Miami -- social equity. Luxury highrise housing along the shores of the bay has become a symbol of the city’s extreme wealth, and in recent years the region has witnessed a growing gulf in inequality between the rich and poor. One recent report estimates the wealth gap in Miami is second-only to New York City among US cities. Miami is home to some 30 billionaires but also to pockets of severe poverty.

The new [Waldorf Astoria tower in downtown Miami](#) may be

emblematic of the immense wealth with hotel rooms and residences that start at \$1 million. A recent report by Richard Florida and Steven Pedigo, [Toward a More Inclusive Region](#), makes the point that many of the workers on which the region depends to sustain its lucrative tourism and development markets earn dismally low wage levels, and have [limited ability to pay for housing and the others basics of life](#).

For Bagué it is a difficult dilemma: “We want people to come and we want to continue to grow but how do we do it in a way that is fair for everyone.” Affordable housing and climate gentrification (the ongoing displacement of lower income residents in parts of the city that include higher elevation and this more attractive ground), are two interconnected and difficult issues moving forward.

It is ironic that it is Biscayne Bay, and views of the bay, that ultimately generates and sustains so much of the economic value driving the city. Surely the bay itself, and the diverse and unique marine life that depend on this ecosystem, deserve to reap some of the wealth it creates, in the form of conservation, repair and restoration. Equally true, the economic benefits that flow directly from Miami-Dade’s Bay conservation efforts should help to ameliorate the poverty and the income and wealth disparity that exist. This is a tall order for an urban estuary, perhaps, and requires new creative thinking about the mechanisms of

municipal revenue raising we need.

Changing the political balance of power and giving a voice to less affluent and communities of color, something that organizations like the [Cleo Institute](#) and the [Miami Climate Alliance](#) (two organizations Bagué recommends for their work) are attempting to do. Resting some of that wealth away from the city’s billionaire-class and using it to help protect and restore the bay would seem sensible and equitable. Bagué notes that the mayor has now created a new Chief Equity and Inclusion Officer (a job parallel to her own), whose job it is to begin to tackle this.

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Biscayne Bay
Photo Credit Miami-Dade County



The collaboration with natural elements, Amsterdam
Photo by Callum Parker

Sound: An Underappreciated Aspect of Healthy City Life

By Alysa Eijkelenboom, Faezeh Mohammadi and Niek de Vreeze

Urban planning is not only about creating livable places or climate-proof cities. It is also about creating healthy environments for urban dwellers. The current COVID-19 crisis teaches us that people with underlying health conditions, such as diabetes mellitus, chronic lung disease and cardiovascular diseases, are significantly more vulnerable to develop severe COVID-19 symptoms (Chow et al. 2020). This evidence supports an understanding that healthy people are more resilient towards diseases and virus outbreaks.

The COVID-19 crisis obviously has struck Amsterdam too. This makes us, urban planning students from the University of Amsterdam, aware that our health is fragile and precious. The recent revival of the topic of health puts new emphasis on how cities relate to health, a foundational subject for the practice and academia of urban planning (Barton & Tsourou, 2013). As planners, we need to shape cities in such a way that cities contribute to health, instead of forming a burden on urban dwellers' health. Coming from an Amsterdam perspective,

where sound (reduction) is an important topic in municipal planning (Municipality of Amsterdam 2020a), we advocate for an increased appreciation of sound as an aspect of urban planning for healthy cities.

By now, it is well known that constant exposure to noise has negative effects on dwellers' physical and emotional health: exposure to traffic sound (the main driver for noise pollution in Amsterdam), street-level noise and general city "ambient noise" causes stress reactions. According to an

article in the Environmental Health Perspectives journal: "Reactions to a stressor can be psychologic [feelings of fear, depression, sorrow], behavioral [social isolation, aggression, excessive use of alcohol, tobacco, food, drugs], and somatic [cardiovascular, gastrointestinal, respiratory illnesses] in nature" (Passchier-Vermeer & Passchier 2000, p. 126). However, sound can also positively impact health: natural sounds from animals and vegetation function as stress relieving (Hedblom et al. 2014, 2017). Therefore, planners should not only focus on noise reduction, but also should actively try to plan for sounds that benefit health.

To critically assess sound in cities, this article uses the concept of "soundscape" as defined by Porteous and Mastin: "The true soundscape study examines the entire continuum of sound, including both negative and positive qualities, and includes both wanted and unwanted sounds" (Porteous & Mastin 1985, p. 170). This article first will explore the types of sounds that impact dwellers' health and will then discuss approaches to improve the urban soundscape.

Urban sounds can be categorized into two categories: human-made (anthrophone) acoustics and natural acoustics (Rehan 2016). Human-made acoustics can be divided into sounds from traffic and sounds from human activities (such as socializing, work, etc.). Natural acoustics can be divided into biophonic sounds, coming from other living

organisms, and into geophonic sounds, coming from natural physical processes such as wind and water (ibid.).

Furthermore, sound can also be classified as wanted, or pleasant, and as unwanted, or noise. According to Schafer (1997), sound becomes noise in three ways: (1) by being an unwanted sound; (2) being an unmusical (non-periodic) sound; and (3) any loud sound. However, completely quiet cities would not function as well; absolute quietness drives people crazy (Valle 2019). Therefore, when planning for a positive soundscape in cities, it is important to critically think about wanted and unwanted sounds. The complexity of soundscapes also influences the evaluation of sounds. If the information someone can obtain from the soundscape is low, it is perceived to be unattractive and boring. If the soundscape becomes too complex, it becomes "unreadable" and leads to annoyance. This, however, is very subjective (Ipsen 2002).

One critical aspect of sound management in cities is to mitigate unwanted sounds as much as possible, to which there are a variety of solutions. In the study of city noise, regulations to control the sound of traffic and construction for example can be one potential solution. However, historically, urban planners have focused too much on the mitigation of noise (Moudon 2009). As an example, sound barriers these days are used in many different cities as ways to mitigate road noise (ibid.). In fact, the construction of sound barriers has become mandatory according to environmental impact assessment procedures in many countries (Arenas 2008).

The Municipality of Amsterdam recently passed the "Amsterdam Noise Action Plan 2020-2023", an encompassing plan for noise reduction in the city with a range of measures to mitigate noise. Nevertheless, as is also acknowledged in this plan, there is still very little attention for the interpretation of sound and potential positive sounds



The sound of water fountains as natural sound, Paris
Image Credit: Faezeh Mohammadi

(Municipality of Amsterdam 2020a).

A more encompassing solution for dealing with noise in cities is mitigating unwanted sounds while also encouraging positive sounds. This could be achieved by creating and increasing urban green spaces. More greenery allows for more absorption of noise pollution, especially traffic noise (Davis et al. 2017; Nordin, et al. 2016). But more greenery also encourages people to walk and cycle to their destination, thus reducing the need for urban transport forms that contribute to noise pollution. Greenery thus not only mitigates but also could function as a reducer of urban noise. Research even shows that, although the relationship between greenery and noise can vary, cities that have more (and more porous) green space on average have lower levels of noise (Nourmohammadi et al. 2021).

Increasing the amount of green space has other benefits as well: it can add wanted sounds to the soundscape, as it creates geophonic sounds and attracts organisms that produce biophonic sounds. A city like Amsterdam, for example, is actively increasing its biodiversity, which has positive effects on dwellers as well as on plants and animals (Municipality of Amsterdam, 2011, 2020b; WWF 2020). A green city attracts more organisms than a city dominated by cars and concrete noise barriers. This can be achieved by reducing emissions from cars but also by increasing the quantity of nature. Increasing the

amount of green spaces attracts more animals to the city, which provides wanted animal sounds (Fuller et al. 2007).

Other wanted sounds that contribute to the soundscape are natural sounds, such as fountains, and geophonic sounds, such as rustling trees (Andringa & Lanser 2013; Ratcliffe 2019). Research shows that by adding pleasant and wanted natural sounds, unwanted sounds are deemed less unpleasant (Rådsten-Ekman 2010). Sound can also provide situational awareness and increase the safety of an area as it tells people where they are and allows people to hear their surroundings (Andringa & Lanser 2013). Church bells or the sound of a tram let people know where they are in the city. Besides that, “quiet and pleasant sonic environments allow the listener full freedom and control over mind-states”, which increases the wellbeing of dwellers (Andringa & Lanser 2013, p. 1440).

To conclude, cities produce a lot of sound. To plan healthy cities, we as planners need to think critically about the acoustic aspect of our profession. Some of the urban sounds are necessary, wanted and pleasant to listen to, while other sounds are not pleasant and unwanted. Historically, more emphasis has been put on the reduction of unwanted noise in cities. However, there are also a lot of possibilities when thinking the other way around. As pleasant sounds often originate from nature (biophonic and geophonic sources), adding more nature and green space can help to change

the soundscape, and therefore enhance the wellbeing of people and the health of nature and animals.

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City Center, Amsterdam
Photo by Charl van Rooy



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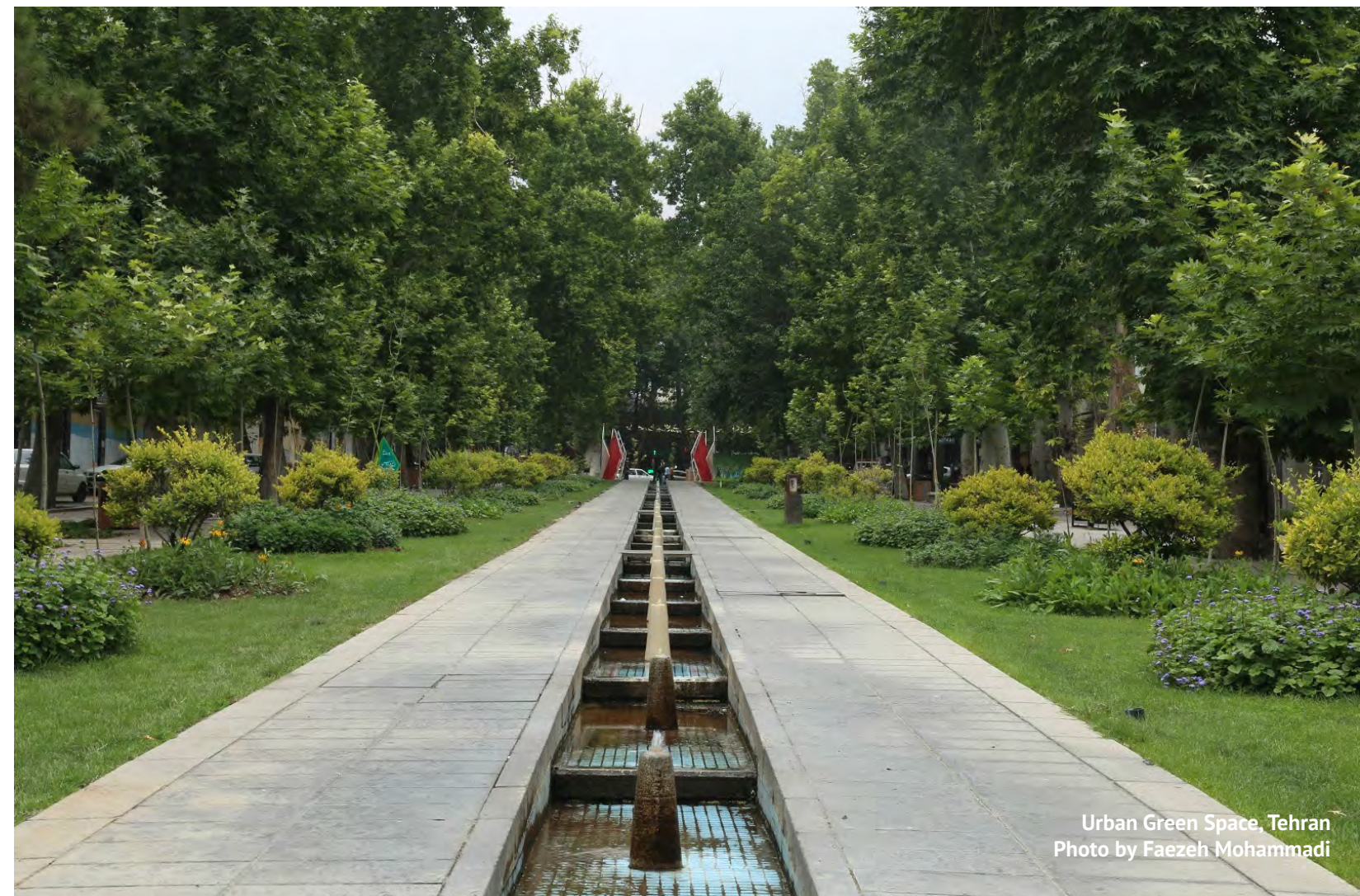
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Kirby Lane Park
Image Credit: Nature Sacred

Kirby Lane Park

By Alden E. Stoner, CEO, Nature Sacred

The open yet cluttered lot on West Saratoga street in Southwest Baltimore was not unlike thousands of others dotting city streets in struggling, often red-lined neighborhoods throughout the country. It had become a dumping ground, a gathering place – but not for children or families. Yet, children and families would walk past it, many hurriedly, daily on their way to work and school in this area of the city that many have described

as a green space desert. Sites like this, scientists have proven, are an actual [detriment to human health](#) (de Leon and Schilling 2017).

But that was before.

Today, not a trace of the discarded toilet seats, crushed drywall and other garbage that marred the space remains. This patch of ground has experienced a rebirth. Now

called Kirby Lane Park, it is a locus for the community where milestones like graduations are celebrated; children squeal and scramble over newly-installed playground equipment while adults play horseshoes – and people pause for a peaceful, restorative moment of reflection in nature. This park is now, finally, a reflection of the community that it holds; a community that now, unbidden, helps tend the park and keep it clean. This type

of engagement and life, though, isn't a given when parks and green spaces are created.

A key difference between Kirby Lane Park and other converted lots is the way in which it came about, and this difference can be a determining factor in how public green spaces such as this fare in the long-term.

Just as our understanding of the nature-health connection has become more nuanced in recent years, so too has our awareness of the community dynamics that are the greatest factor determining the future of newly-established parks or green spaces. If we want to see more thriving community green spaces that, like Kirby Lane Park, draw the community in, then deep and deliberate community engagement is a must. This engagement is nothing less than a collective exercise in a bespoke public health and wellness intervention.

Without it, a landscape architect would likely never have thought to include a space for playing a game of horseshoes. This one design detail - conceived by community members - was the X factor for Kirby Lane that drew the community into the space before construction was even completed.

Perhaps one of the most overlooked and minimized phases of greenspace design, a structured approach to community engagement should be considered foundational. **Community canvassing, invitations to participate,**

collective ideation and planning session, stakeholder sign-off; these all are key components of a well-designed community engagement strategy. This is the case regardless of whether the green space is at a hospital or in an under-resourced and disenfranchised neighborhood; but in the latter case, early engagement is critical. And the coming together and planning itself can seed an atmosphere of togetherness and community that impacts how the park is embraced from the very beginning.

No one can speak to the creation of Kirby Lane Park better than neighborhood resident Donald Quarles, “block captain” and Firesoul of the Sacred Place that is nestled inside the park. Quarles was integral to the transformation of the space; a decades-long resident of the neighborhood, he witnessed firsthand the troubles and struggles that manifested in an outward decline of the neighborhood. He innately understood the role this small

space of vacant land could play in the mending of his community. Quarles himself has described this park as a healing park - a serenity space - a place for adults to come to find healing for their “hurts, habits and hang-ups.” And this is precisely the purpose of Sacred Places; to give people a place to connect with and heal in nature.

Proof of the depth of this park's impact on the people it serves has already been captured in a weatherproof yellow journal tucked beneath the Nature Sacred bench at the center of the space. Sometimes mundane, other times profound – the musings left on these pages show us, in the community's own words, nature's impact on one's thoughts, feelings and emotions.

Nature Sacred has collected thousands of these journal entries over the past quarter century, many of which were left in journals in the 30-plus other Sacred Places, all open and green, that can be found networked around Baltimore.



After
Photo by Harry Conolly



Kirby Lane Park
Image Credit: Nature Sacred

The Kirby Lane Park story is one that cities across the US and around the world can learn from. The park's restoration is a community-led initiative with a profound purpose: to address the health and wellness of the people who call this neighborhood, this park, home.

The body of research around the integral role nature plays in the health of both individuals and communities is vast and sound. However, moving this science into the realm of public practice still faces hurdles. Since last March and the initial lockdown, though, we have seen the national narrative shift from nature being an amenity to a necessity to it being utterly essential.

While the conversation is shifting, implementation and funding has some room to catch up. If we were to invest in green spaces, ensuring people had a place to gather and just be in nature, we would surely obviate,

in part, untold trips to the doctor. Case in point: roughly 12 percent of ER visits are made by people seeking help for depressive symptoms. We have empirical data showing how converting a blighted lot into a space like Kirby Lane Park [lowers symptoms of depression](#) in those who live nearby (South et al. 2018).

While the re-imagining of Kirby Lane Park was community-driven, the transformation was made possible by Bon Secours Health System - which has long been addressing health disparities in Baltimore through broad-based initiatives that address the lack of affordable housing and other essential social services. It was Bon Secours that invited Nature Sacred, along with multiple other organizations, into the project. Kirby Lane Park is one of four similar biophilic projects Nature Sacred is currently collaborating with Bon Secours on to bring Sacred Places – contemplative healing nature – to Southwest Baltimore, and to neighborhoods

nationwide where the need is particularly dire.

Daniel Greenspan, manager of Community Design & Engagement, Department of Housing and Community Development, Bon Secours Community Works says: "As a healthcare organization, we understand that there are a multitude of factors that contribute to the happiness and health of communities – one of which is access to cherished green spaces in communities which oftentimes have insufficient nature access to gather, play, and seek respite." According to Greenspan, "Through partnership and collaboration, together, we create distinctive community-designed spaces that foster holistic wellbeing and dignity."

It's rare to identify one form of intervention - as simple as nearby nature - that can have such a marked impact on such a broad and varied range of societal issues - from crime to individual health to the environment. Yet that's exactly what Kirby Lane Park has achieved.

Alden E. Stoner is CEO of Nature Sacred. For over to two decades, she has focused on mobilizing organizations and the public around social issues, films, Fortune 500 brands, and start-ups. Alden holds a dual Masters in Global Media and Communication from USC and the London School of Economics.

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Firesoul and Block Captain Donald Quarles is pictured in Kirby Lane Park
Image Credit: Nature Sacred



Park in a Truck By Tim Beatley

Kim Douglas, a landscape architecture professor at Jefferson University in Philadelphia, has been developing and experimenting with a unique idea for urban greening. What if you could develop a set of pre-built site design elements -- garden boxes, benches, chairs, plants -- that make up a kit of parts that a neighborhood can select and mix and match to create the kind of pocket park that best serves their needs? All of these site improvements will sit right on the surface of the lot with no need for digging or for laying concrete. They are quickly installed. The materials to build the park literally arrive on a truck. Thus, *Park in a Truck*.

The idea has also been called IKEA for parks, born from a desire to green as many vacant lots as possible in the City of Philadelphia for as little cost as possible. There are an estimated 40,000 vacant lots, so the potential to change cities, and indeed the city as a whole, is significant indeed. The City of

Philadelphia had been interested in the idea, Douglas told me in a recent interview, in part to address the common problem of “[short dumping](#),” where vacant lots become receptacles for construction waste.

Douglas and colleague Drew Harris, who teaches population health, floated the idea initially in an [op-ed piece](#) in the Philadelphia Inquirer in 2019. “Let’s bring nature back into everyday,” Douglas and Harris argue in this op-ed, “by using adjacent vacant lots to create a network of block-by-block green links—corridors of high quality outdoor spaces.” Such a program would help to address the health and economic disparities in Philadelphia and provide a small but significant opportunity for residents to take a degree of control over and improve their urban neighborhoods. “Our proposal would build community capital in a way no program run by and with outside groups

can,” say Douglas and Harris. The response to the initial op-ed was quite positive.

Douglas told me she believes strongly that urban neighborhoods need much more nature, closer by, and these vacant lots throughout the city represent a real asset. Philadelphia does well when it comes to more conventional parks with more than 94% of its population living within a 10-minute walk of a park, which is a common target now embraced in many cities. But this is not enough, and she thinks we are setting our sights too low. “If I’m 85 or I’m 5 that’s too far to go,” she told me. After all, a ten-minute walk still amounts to a walk of about a kilometer. These smaller, more frequent and closer-by mini-parks represent “stepping stones” to larger parks and greenspaces. In their op-ed article, Douglas and Harris advocate for a more radical goal for cities: “Can we imagine a

city where every child or adult lives within 30 seconds of a green space? An oasis of calm, where they can walk, run, play or just relax.” Everyone within 30 seconds of a park!

These parks could also provide a network of ecological stepping-stones throughout the city. Douglas tells me there is an emphasis on planting native plants and plants important for local wildlife.

Parks in a Truck is meant to be a highly inclusive model of transforming vacant lots, where neighbors and the surrounding community decide on what they want in their park. Here residents get a direct say in the design elements that they want and then are involved in the building of the park as well as its long

term care.

The first of these parks in a truck has been built by Douglas and a team of volunteers in the Philly neighborhood of Mantua. Impressively, the park was built in only six weeks with labor from the neighborhood, like a neighborhood barn raising. Volunteers reflecting a variety of age groups from quite young to old, met for a few hours each Saturday morning. It’s important for neighborhoods to design, build and maintain their own parks, she says: “That way they’re invested. It’s their park. I’m not doing it, they’re doing it.”

To make it easier for neighborhoods, Douglas has developed four prototypes: event parks, nature parks, sanctuary parks and edible parks (though

it is possible to mix and match features between them). She describes these pre-established design elements as “puzzle pieces that you can interchange.” They are delivered as modules, eventually accessed, she hopes, from a network of warehouses around the city (something like IKEA stores she thinks). For a 16 ft by 70 ft lot, maybe 15 pre-assembled modules would be needed. Each will have its own price, and Douglas will be able to provide the neighborhood with a rough estimate of the time requirements to maintain the resulting park.

The cost of building even a small neighborhood park remains a real challenge. Parks in a truck are going to be much less expensive than a conventional conversion of a vacant lot to



Image Credit: Thomas Jefferson University

Four Potential Park Designs



a park: they can be done for \$50,000 each (rather than the more typical \$300,000). And Douglas hopes that eventually they will be able to lower the cost, down to \$10,000 a piece, a price she thinks is possible. Presumably, these parks will allow for a redesign or reconfiguration over time as the needs and desires of the neighborhood may change. They could be additive as well: installing the basic elements that make the park safe and attractive first, then adding other elements on the neighborhood wish-list as more funding is found.

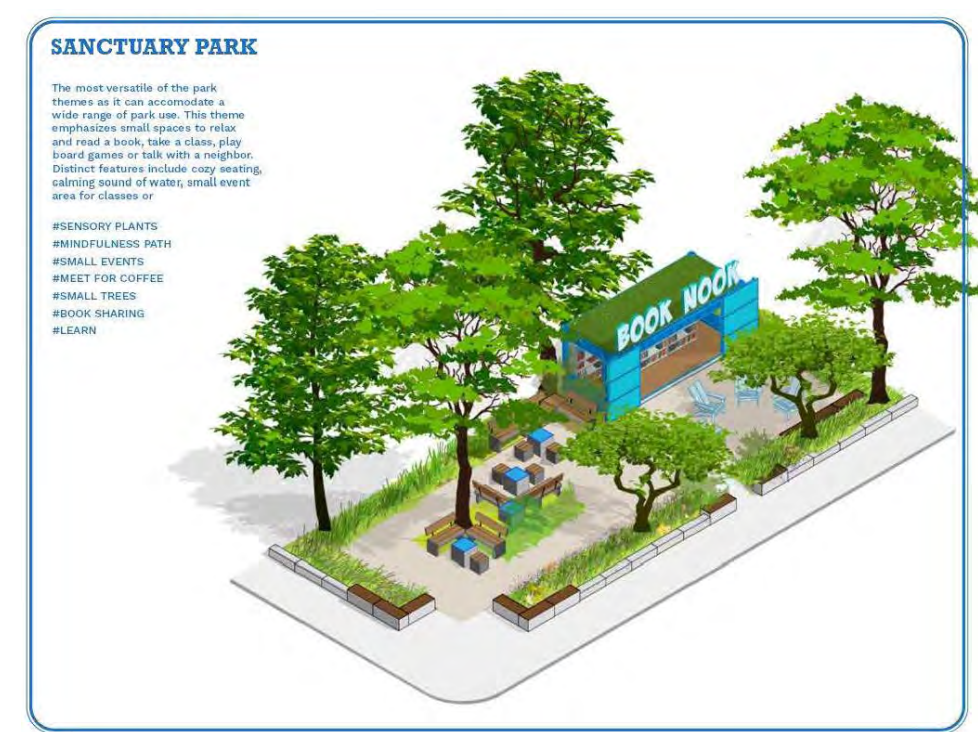
Kim Douglas has other rewilding aspirations for her city and is currently working with her Landscape Architecture students on a pollinator corridor that would connect the John Heinz National Wildlife Refuge to the city zoo. It is another example of testing out a new idea for the ecological city of the future. In 2019, [Douglas won the Community Service Award](#) from the American Society of Landscape Architects, a well-deserved recognition for her work, and for the work of her [Lab for Urban and Social Innovation](#). The Lab and the studios she runs represent an important model for design education; one that emphasizes community partnerships and the seeding of ecological innovations that hold potential for improving the urban life and ecology of this city, and especially its deep and lasting inequalities across neighborhoods.

Resources:

Bederka, Mike (July 11, 2019). Landscape Architecture Director Wins ASLA's Community Service Award. Thomas Jefferson University. <https://www.jefferson.edu/about/news-and-events/2019/7/landscape-architecture-director-wins-award.html>.

Bond, Michaelle (Aug. 30, 2019). Philly is trying to stop illegal dumping by tracking who hauls contractors' trash. *Philadelphia Inquirer*. <https://www.inquirer.com/news/short-dumping-illegal-philadelphia-trash-contractor-construction-permit-litter-20190830.html>.

Douglas, Kim and Harris, Drew (June 29, 2018). Let's promote health and green space one empty lot at a time." *Philadelphia Inquirer*. <https://www.inquirer.com/philly/health/health-cents/lets-promote-health-and-green-space-one-empty-lot-at-a-time-20180629.html>.





Kazan Kremlin and Kazanka River
Photo by Rafael Mukhametdinov

Kazanka Strategy: Creating Russia's Largest Urban Riverpark

By Ekaterina Goldberg, Co-Founder at Orchestra Design

Kazan, Tatarstan's capital city and one of the most vibrant Russian million-plus cities, is known for its business-friendly environment, high speed of development and active scientific research. Since 2015, under the curation of Natalia Fishman-Bekmambetova, advisor to the president of Tatarstan, Kazan has been pioneering a public spaces renovation programme, which saw the renovation of more than 400 parks around the entire Republic. The programme, by its scale and participatory methodology, became a standard for Russian cities.

As a continuation of the programme, the city set itself an even more ambitious mission: adoption of an ecological strategy that aims to become the new guiding tool for the capital city's development for the next five to ten years. In 2019, under the direction of Fishman-Bekmambetova, the Kazanka river strategy was launched and piloted by urban design studio Orchestra Design, in collaboration with city departments, ministries of the Republic of Tatarstan and key public stakeholders.

The river strategy began with a "mobilisation" process that identified and involved more than 100 local experts, community leaders and stakeholders. A participatory online platform was launched (www.kazanka.tatar) where citizens could locate their suggestions and report issues on the map. More than 600 contributions were submitted and analysed. The participatory process was also present in social media with over one hundred posts (@kazanka.tatar) and partnerships with local press extending the reach

of the mobilisation process. The combination of an online and offline visual presence of the strategy was important to diversify the profiles of contributors, and to mobilise the energies of potential future stakeholders and local associations.

In 2020, the strategy was officially approved and set into implementation by the President of Tatarstan, Rustam Minnikhanov, and Mayor of Kazan, Ilsur Metshin.

Why Kazanka?

Kazanka river flows for 22 km through the heart of Kazan, with about 500,000 people living within a 15-minute walk from the river, but with almost no access to it. Over the years, major pieces of infrastructure created barriers along the river; concrete embankments were created and slowly but steadily private

developments were encroaching on the natural areas. Many Kazan citizens were crossing the river by car every day without being much aware of its presence.

As a response, the aim of the strategy is to create the largest connected ecosystem of river parks in the country, with the creation of 12 new parks, 150km of pedestrian and cycling paths, and over 1,500 ha of accessible and protected green territories. "Eco-gates" designed as eco-parking with basic facilities will allow visitors to comfortably access the park. An iconic 42km walking and bike trail called "from Blue Lakes to Volga" will be the symbol of this new continuity.

These territories will not only become new recreational destinations; the ambition is to utilise their potential to become an economic and educational resource for the sustainable development of Kazan,

through the support of green technologies, eco-tourism and recreation.

The influence on city health has also been assessed using methodologies approved by the World Health Organization. The implementation of the strategy will potentially lead to a 13.4% decrease in annual mortality in the city and save up to \$20 million USD of health expenses for the city. In the time of pandemic, making accessible natural territories has never been more important to encourage a healthier lifestyle and "breathing spaces" for all.

The 12 parks of Kazanka: One Common Mission through Different Identities

The 12 new river parks will increase the amount of square meters of parks per citizen fivefold. Each park will have its own cultural identity and



Manzara (Park No. 2.)
Image Credit: Orchestra



different embankments will have unique character, but they will share a common mission: to protect natural assets and reinforce the connection between citizens and nature through eco-education, educational signages, a variety of recreational opportunities in nature supported by park services and cultural programs.

Facing the Kremlin, park Manzara (panorama in the Tatar language) will boast the best views of the historical center through a system of piers and an amphitheatre integrated within an existing dam structure and within natural areas. The park will preserve the old birch grove surrounded by anti-flooding canals made in the times of Peter the Great. The piers will tell the story of the changing panorama and how it evolved throughout the city's history.

The Su Alany (water field in Tatar) wetlands park, on what is now a polluted swamp, will undertake

a slow ecological remediation program, which will host a combined university research and visitor centre. The park will offer the possibility to put on rubber boots and explore the safe areas of the swamp, as well as to walk along the wooden paths to discover the swamp's rich wildlife.

The 5 Rivers Park is the largest park of the strategy, at over 600ha – it will be a natural park that will allow visitors to get away from the city, only 30 minutes from the center. The park will invite visitors to spend a day walking or biking along the meanders of the river and its four tributaries. This will be a perfect destination for school camping and out-of-school classes as well as family week-end retreats.

Ecological Actions: Identify, Protect, Monitor and Clean

Kazanka and its adjacent territories are a complex ecosystem of underwater

springs, wetlands, small streams, and lakes, as well as ancient trees, rare plants and birds. One of the strategy's first steps was to identify and map all these natural assets with the collaboration of local ecologists.

The biodiversity map resulting from this collaboration will be used as a base for educational materials as well as navigation in the parks. Ecological research is a first step and provides the basis for each of the park's projects to make sure that every park project preserves the ecosystem and creates the opportunity for people to learn from the project to take care of the park.

In order to legally preserve the natural territories, the official borders of the park were legally adopted, including 660 ha of land listed as a natural reserve. In the process, a large residential project on protected area was officially canceled, preserving 20 ha of land; a symbolic win and a signal that ecology is becoming an important driver for the Tatarstan capital.

The strategy also set the base to launch a participatory water-monitoring system that will help to identify unknown sources of water pollution. Data will be made accessible to the public and the progress in the identification and removal of sources of pollution such as stormwater run-off or illegal discharges will be monitored. The strategy offers a more complex set of tools to clean the water, moving away from the old approach that included only on mechanical cleaning stations.

Kazanka as a Platform for Green Tech

The strategy was an opportunity to go beyond a pure urban planning with the aim of becoming a platform of opportunities for innovations and collaborations between startups, universities and the city. The first step is the organization of a large green tech event around Kazanka in 2021 bringing together startups from the whole country and national and international experts with the support of the Russian-French initiative Dialogue de Trianon.

Eco-tourism as an Emerging Economy

Beyond green technologies, the Kazanka strategy has revealed real economic potential for eco-tourism in Kazan. It is estimated that 5.7 million visitors will visit Kazanka parks every year, approximately 20% of them tourists. The ecological tourism will offer opportunities for visitors

to participate in a whole set of natural activities like eco-camping, sports in nature, forest bathing (from the Japanese tradition of Shinrin Yoku), bird-watching and guided walks.

The development of eco-tourism will also be supported by private investments in a number of hotels, camping sites, ecological and touristic centres. The extensive mobilisation campaign around the Kazanka strategy attracted the attention of investors and established a dialogue platform. A Kazanka Manager was appointed at the end of the study to be the point of contact between potential investors and the city to facilitate discussions.

A Strategy as a First Step: a Future Federal Model of River Parks

Following the official approval of the strategy, a series of implementation seminars took place between relevant public stakeholders: city administration,

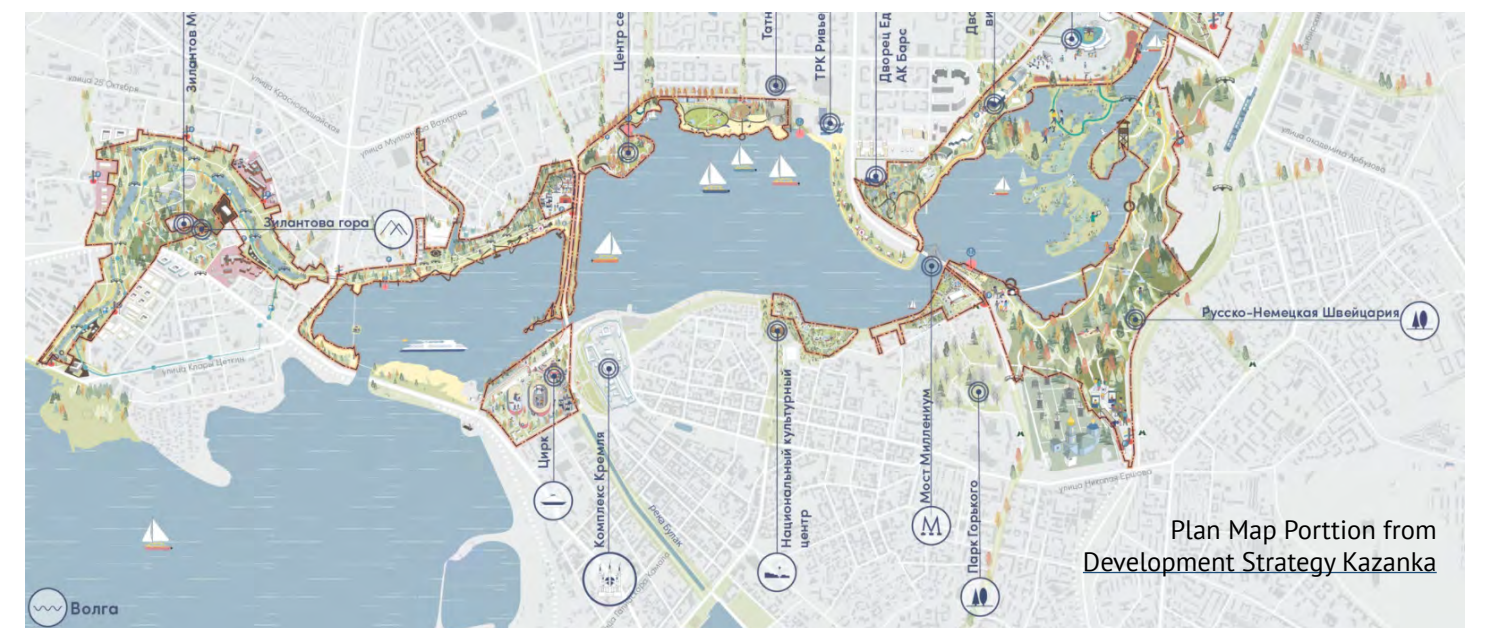
republic ministries and the author of the strategy. The delicate transition between a strategy and concrete implementation projects will be further ensured by a Kazanka team.

The ambition now is to create the first National River Park and to create a specific federal model for preservation and evolution of river territories within large cities in Russia. This would recognize the particularities of such territories and the necessity to put in place flexible planning tools and legislation at the federal level. More importantly it would encourage the development of know-how, which can benefit other Russian cities.

Resources:

Development Strategy Kazanka: From the Blue Lakes to the Volga. <https://kazanka.tatar>.

Orchestra Design. <https://www.orchestra-design.com/ru>.



From Island Press:

In *The Bird-Friendly City*, Timothy Beatley, a long-time advocate for intertwining the built and natural environments, takes readers on a global tour of cities that are reinventing the status quo with birds in mind. Efforts span a fascinating breadth of approaches: public education, urban planning and design, habitat restoration, architecture, art, civil disobedience, and more. Beatley shares empowering examples, including: advocates for “catios,” enclosed outdoor spaces that allow cats to enjoy backyards without being able to catch birds; a public relations campaign for vultures; and innovations in building design that balance aesthetics with preventing bird strikes. Through these changes and the others Beatley describes, it is possible to make our urban environments more welcoming to many bird species.

The Bird-Friendly City
By Timothy Beatley



From the Routledge:

Written by a leading proponent of biophilic design, this is the only practical guide to biophilic design principles for interior designers. Describing the key benefits, principles and processes of biophilic design, *Nature Inside* illustrates the implementation of biophilic design in interior design practice, across a range of international case studies – at different scales, and different typologies. Starting with the principles of biophilic design, and the principles and processes in practice, the book then showcases a variety of interior spaces – residential, retail, workplace, hospitality, education, healthcare and manufacturing. The final chapter looks ‘outside the walls’, giving a case study at the campus and city scale. With practical guidance and real-world solutions that can be directly-applied in day-to-day practice, this is a must-have for designers interested in applying biophilic principles.

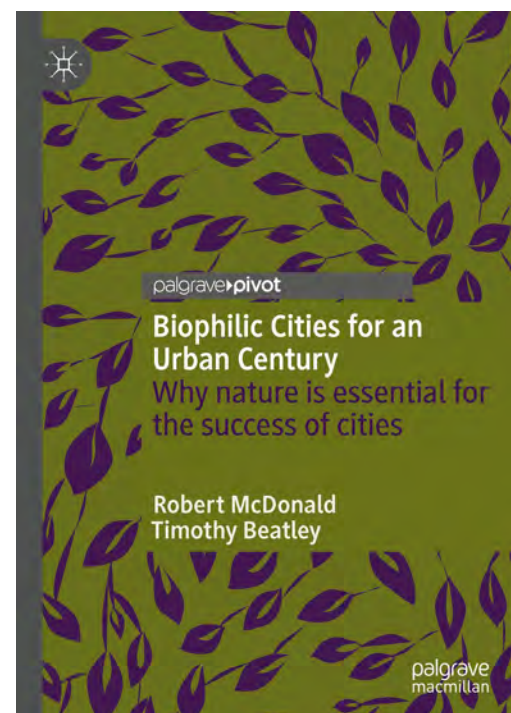
Nature Inside: A Biophilic Design Guide
By William D. Browning, Catherine O. Ryan



Biophilic Cities for an Urban Century
By Robert McDonald and Timothy Beatley

From the Palgrave MacMillan:

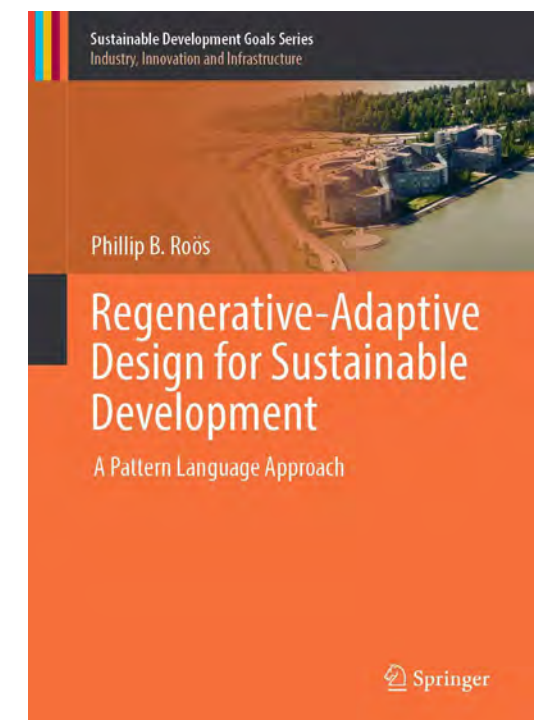
This book argues that, paradoxically, at their moment of triumph and fastest growth, cities need nature more than ever. Only if our urban world is full of biophilic cities will the coming urban century truly succeed. Cities are quintessentially human, the perfect forum for interaction, and we are entering what could justly be called the urban century, the fastest period of urban growth in human history. Yet a growing body of scientific literature shows that the constant interaction, the hyper-connectedness, of cities leads to an urban psychological penalty. Nature in cities can be solution to this dilemma, allowing us to have all the benefits of our urban, connected world yet also have that urban home be a place where humanity can thrive.



From Springer:

In this book, the author tests a regenerative-adaptive pattern language theory towards investigating the possibilities of a holistic, integrated design and planning method for sustainable development that incorporates the principles of regenerative design, as well as an adaptive pattern language that re-establishes our wholeness with nature, and considers the vulnerabilities of a changing landscape. The book examines an integral approach to contemporary theories of planning and design that explores the human-nature relationship patterns in social and spatial interconnections, between people and their natural environments. The interconnectedness of human and natural systems is used to scaffold possible solutions to address key environmental and sustainability issues that specifically address the need for patterns of behaviour that acknowledge the duality of ‘man and nature’.

Regenerative-Adaptive Design for Sustainable Development: A Pattern Language Approach
By Phillip B. Roös



Ocean City

By Jamie K. Reaser

Some 400 million
years ago a departing
and a reconstruction:

Fins for limbs.
Gills for lungs.
Eyes capable of spotting
what was needed or
needed to be avoided
across long horizons.

Now they say:

“The seas are rising!”

The oceans are coming
for the land that something
crawled out upon.

“Build!” they say,
imagining grand escapes
into floating cities.

I advise:

“Hire the humpback!”

She should be in charge
of all the necessary
filtration systems.

“Bring the lantern fish!”

They’ll oversee the anglers
jellies, and diatoms. They’ll
operate the bioluminescence
farms. There will be light.

“Enlist the octopus!”

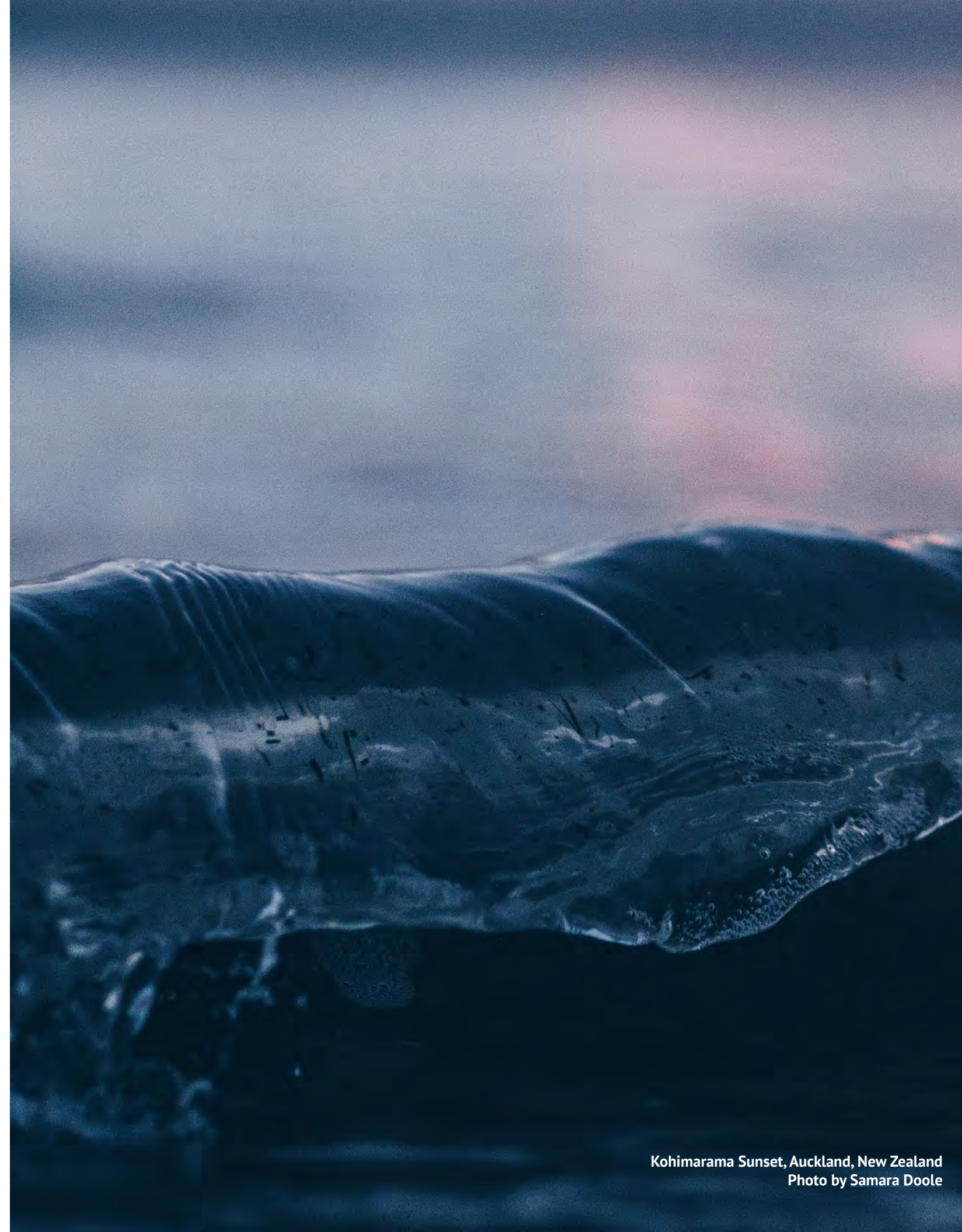
I think something should
be fit to a place, look like
it belongs there. Creation
should not be an outrage.

Seabirds for chickens.
Walruses for pigs.
Oh, aren’t we lucky
to already have:

Cowfish
Horsefish
Ponyfish
Goatfish
Hogfish
Rabbitfish
Dogfish
Catfish

You can laugh, but
what if that which
is considered futuristic
is actually our soul’s
grand plan
to go home?

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Kohimarama Sunset, Auckland, New Zealand
Photo by Samara Doole

