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Commentary

## Biophilic Cities and Healthy Societies

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### Abstract

Biophilia holds that as a species humans are innately drawn to nature and to living things. Mounting research confirms the many positive health benefits of contact with nature, and the need for daily (and hourly) contact with the natural environment in order to live happy, healthy, meaningful lives. A new vision of Biophilic Cities is put forward here: cities that are nature-abundant, that seek to protect and grow nature, and that foster deep connections with the natural world. This article describes the emergence of this global movement, the new and creative ways that cities are restoring, growing and connecting with nature, and the current status and trajectory of a new global Biophilic Cities Network, launched in 2013. There remain open questions, and significant challenges, to advancing the Biophilic Cities vision, but it also presents unusual opportunities to create healthier, livable cities and societies.

### Keywords

biophilia; biophilic; nature in cities; resilience

### Issue

This commentary is part of the issue “Social Ecology of Sustainability”, edited by Stephen Wheeler (University of California, Davis, USA), Christina Rosan (Temple University, USA) and Bjoern Hagen (Arizona State University, USA).

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The concept of Biophilic Cities, or Biophilic Urbanism, has emerged as a compelling vision for how cities of the future will be designed and organized. It builds on the essential insight of “biophilia”: that we are drawn to nature, and that we have an innate connection or affiliation with the natural world (e.g., Beatley, 2011, 2017; Kellert & Wilson, 1995; Wilson, 1984).

Research shows the remarkable ways in which contact with nature can make us happier and healthier as well as contribute to meaningful urban lives. Findings from the work around Japanese “forest bathing” show that a walk through a forest or greenspace has discernible mental health benefits, for instance reducing stress hormone levels and boosting immune systems (e.g., Wang, Tsunetsugu, & Africa, 2016). Nature also enhances cognitive performance and mood (e.g., Berman, Jonides, & Kaplan, 2012; Bratman, Hamilton, Hahn, Daily, & Gross, 2015), and is a significant antidote to long-term chronic stress experienced by many urbanites (e.g., Roe et al., 2013). Studies show that in the presence of nature, humans are more likely to be generous and cooperative as well as to think longer term (Weinstein, Przybylski, &

Ryan, 2009; Zelenski, Dopko, & Capaldi, 2015). The experience of nature helps people live in ways that recognize the claims of others and the larger world. In short, nature helps make us better human beings and fosters the qualities that will be essential to resilience, sustainability, and healthy social ecologies.

Biophilic cities are also profoundly resilient cities. Virtually every step or action taken to increase nature in the city will help to make it more resilient. Rising urban heat, for instance, is a growing problem, and many of the most effective planning responses, from urban forestry to ecological rooftops, will at once insert new nature and cool urban environments. In addition, the Nature Conservancy’s recent global analysis of urban tree planting shows how effective such steps can be in addressing serious air quality problems experienced in cities in the Global South (The Nature Conservancy, 2016).

The vision of Biophilic Cities has been gaining traction recently. Colleagues and I launched the global Biophilic Cities Network in 2013, and there are now fifteen cities participating in this Network. Individuals and organizations can join the Network by simply signing an on-line

pledge<sup>1</sup>, while new partner cities must, among other requirements, select and monitor over time a set of metrics and adopt a Biophilic Cities resolution or proclamation. In support of this Network we organize webinars, produce films about participating cities, collect and share model biophilic codes, and produce a new Biophilic Cities Journal<sup>2</sup>.

Biophilic cities celebrate, protect, and restore flora, fauna, and fungi while taking every opportunity to integrate nature with built structures. The vision of Biophilic Cities is of a blended nature in which remnant natural species and habitats mix with more human-designed forms of nature such as living walls, green rooftops, and skysparks (e.g., Kellert, Heerwagen, & Mador, 2008). Each city must explore the most effective and appropriate ways to integrate nature given its own unique natural settings and qualities. Biophilic cities must also understand nature as an integrative land-sea notion, including a “blue urbanism” along with other forms of urban greening (Beatley, 2014).

Many urban areas worldwide are helping us re-imagine urban environments as nature-immersive places. Singapore has recently changing its official motto from “Singapore, a Garden City,” to “Singapore, a City IN a Garden.” The city’s Landscape Replacement Policy requires new buildings to include nature in the vertical realm to replace nature lost at ground level. This ordinance has resulted in new buildings, such as the Park Royal hotel, that contribute much to the sense of immersive green city. Milwaukee is creating new green pockets by consolidating vacant parcels through its GR/OWN Program. San Francisco has created a new Sidewalk Garden Permit that allows residents to take up some hard surfaces and plant flowers and shrubs, and its pioneering program for creating Parklets (from on-street parking spaces) has gone global. Portland has emphasized the installation of “green streets”: portions of roadways and sidewalks that become stormwater collection facilities through the creation of bioswales. Pittsburgh has sought to make its riverfront accessible by investing in walking and biking trails, and even a “water trail,” as well as new waterfront parks such as the South Shore Riverfront Park. A large number of other cities including Wellington, NZ, Rio de Janeiro, and Singapore have also been investing in urban trails that add mobility options while making access to nature easier (see Beatley, 2017).

Not only does a Biophilic City put nature at the center of its design and planning, it also creates programs, initiatives, and opportunities for residents to experience nature directly and to engage in citizen science. Whether through birding, participation in a BioBlitz, or serving as a volunteer nature guide, residents deepen connections to place and nature while forging friendships and social connections. Austin, Texas, for example, is famous for its efforts at protecting and celebrating the 1.5 million Mexican free-tailed bats that occupy the underside of the

Congress Avenue Bridge in downtown Austin (believed to be the largest urban bat colony in the world). Biophobia and fear characterized the city’s initial response to the bats, but thanks to the work of groups like Bat Conservation International (BCI) the bats were saved and their return each spring (and nightly emergence from the bridge) is celebrated, becoming the source of millions in tourism revenue. As BCI founder Merlin Tuttle says, Austin is now “a city that loves bats” (Tuttle, 2015). St Louis has exhibited a similar love affair with Monarch Butterflies. Setting an initial goal of planting 250 butterfly gardens, the city has now seen more than 370 installed.

Engaging residents with nature faces many challenges: a hurried and harried lifestyle, a growing dependence on electronic media which often distracts us from nature, the fact that natural elements are often small or hard to see, and the need for active coaching and mentoring. Residents often have the sense that nature is to be found only in certain places in the city. Educational efforts are needed to help us re-imagine a city as a nature-immersive place. Nature of course is also a culturally defined concept, and cities will need to be open to exploring the different forms it might take. Biophilic cities include both living nature (e.g., birds and wildlife) and many human-created shapes, forms, and images of nature (for instance, murals). Increasingly we are seeing nature “hybrids” which challenge our conventional ideas about what nature is. Singapore’s SuperTrees are one example—large, visually dramatic metal structures that do in fact shade and cool urban spaces as well as serving as home to thousands of living plants. Urban nature in the future will likely entail the creative blending of real and artificial natural systems, requiring us to expand and grow beyond our conventional ideas of nature.

One continuing challenge is social justice and the need to ensure that access to natural assets and experiences within a biophilic city is fairly distributed. Greener, leafier neighborhoods tend to be higher-income and absent of minorities. In a recent interview in the *Biophilic Cities Journal*, Oakland Re-leaf founder and director Kemba Shakur tells how there were more trees and greenery in the Soledad Prison where she worked than in the predominantly African-American neighborhood in which she lived. To address such equity questions, cities such as Los Angeles and New York have taken steps to invest in parks and greenspaces in underserved neighborhoods (e.g., City of New York, 2014).

Another challenge is that markets often respond to the presence of nature by raising housing prices and displacing residents, a phenomenon that has been described as “ecological gentrification” (e.g., Dooling, 2009). Heralded projects like the High Line in New York have now become cautionary tales, as displacement and unaffordability have deepened as a result of investment in what all agree is a wonderful park. We need to develop and apply new mechanisms for spreading fairly the col-

<sup>1</sup> See <http://www.BiophilicCities.org>

<sup>2</sup> See <http://biophiliccities.org/biophilic-cities-journal-volume-1-issue-1>

lective benefits of urban nature, and dampening their unintended consequences, for example through new mechanisms aimed at value capture and planning tools such as neighborhood benefit agreements.

The vision of Biophilic Cities can and must be harnessed toward the joint goals of nature-connection and poverty-reduction. We can and must confront the paradox that many of our most *natureful* cities in the northern Hemisphere sustain themselves from global resource flows that inflict considerable damage on far-away nature. Urban areas of the future must care about and protect distant nature as well as nature within their borders. Likely actions could include support (financial and otherwise) for biophilic city planning in other parts of the world, and trade agreements and purchasing decisions that reflect biophilic ethics (another dimension of what we might call a “just biophilia”).

There are few visions for future cities as compelling and as appealing as that of Biophilic Cities. Concepts such as sustainability and resilience are important, but we must also envision and dream of (to paraphrase Thomas Berry, 1990) the kinds of places we want to live in, raise children in, and grow old in. Nature in all its forms will be the centerpiece of a new global urbanism that leads to healthier people and healthier societies.

#### Conflict of Interests

The author declares no conflict of interests.

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### About the Author



**Timothy Beatley** is the Teresa Heinz Professor of Sustainable Communities, in the Department of Urban and Environmental Planning, School of Architecture at the University of Virginia, where he has taught for the last twenty-five years. Much of Beatley's work focuses on the subject of sustainable communities, and creative strategies by which cities and towns can fundamentally reduce their ecological footprints, while at the same time becoming more livable and equitable places. Beatley believes that sustainable and resilient cities represent our best hope for addressing today's environmental challenges. Beatley is the author or co-author of more than fifteen books on these subjects, including *Green Urbanism: Learning from European Cities* (recently translated into Chinese), *Habitat Conservation Planning*, *Native to Nowhere: Sustaining Home and Community in a Global Age*, and *Planning for Coastal Resilience*.