



## **Biophilic Public Health: Re-imagining Public Health for the 21<sup>st</sup> Century**

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### **Trees**

A recently published study of nearly 50,000 New Zealand children intriguingly suggests that living in greener areas with more exposure to native plants and a wider variety of vegetation may reduce the risk of being asthmatic (Donovan *et al*, 2018). Although more research will be required to validate these results and tease out possible cause-and-effect pathways, it is one of the latest studies in a growing body of literature about the health benefits of living life in close proximity to trees and other plants (van den Bosch and Bird, 2018). The emerging list of likely human health benefits is extensive and includes lowering stress hormones, improved immunity, lower blood pressure, less depression and anxiety, less cardiovascular disease, and possibly lower cancer risk and longer life expectancy (Li and Bell, 2018; James *et al*, 2016). More trees and nature in daily life may even appear to be a protective factor helping prevent some of the harmful health effects of socio-economic disadvantage, and so helping to reduce socio-economic inequalities in health and highlighting “*nature’s role as a critical health amenity*” (Mitchell *et al*, 2018, p186). An abundance of trees and greenery in children’s playgrounds and schools improves children’s physical and social development, cognitive development and school performance, and access to nature may help protect against childhood obesity and help children cope with the adverse effects of stressful experiences in childhood (Wells *et al*, 2018). Simply having a pleasant and interesting view of trees from a hospital window rather than a view of a brick wall improves patient recovery times, reduces the need for analgesia, and is associated with earlier discharge after surgery (Ulrich, 1984), while workplaces that include nature experience higher productivity (Nieuwenhuis *et al*, 2014; Elzeyadi, 2011). Perhaps somewhat unexpectedly, trees may even make us better people and contribute to healthier community as they improve our behaviour, the quality of our social interactions, and reduce crime rates (Kuo *et al*, 1998; Kuo and Sullivan, 1998; Donovan and Prestemon, 2012; Holtan *et al*, 2014).

This is all in addition to the more commonly recognised benefits of trees in terms of, for example, improved air quality, soil stability and health, shade and urban cooling, food production, habitat and food for other species, absorbing carbon and so helping buffer our impact on the climate system, not to mention providing places of joy, beauty, inspiration, contemplation, relaxation, recreation and play.

Planting trees in our cities, suburbs, schools and backyards; restoring native forests; and, increasing the opportunities to experience forested urban environments, would all therefore appear to be important and effective public health endeavours. Indeed with the synergy of benefits for human health and biodiversity, climate change prevention and adaptation, and a myriad other ecological benefits, such an approach could rightly be described as an example of

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<sup>1</sup> See: [https://www.ttophs.govt.nz/dr\\_neil\\_de\\_wet](https://www.ttophs.govt.nz/dr_neil_de_wet)

biophilic public health. Allowing this thinking to draw on the well-developed concepts, values, ideas and principles of biophilia, biophilic design, and the biophilic cities movement, could provide the theoretical framework, insights, inspiration and practical approaches necessary for public health to engage effectively with the challenges of the 21<sup>st</sup> century.

### **Biophilia**

Biophilia is the deep, inherited connection we as humans have with nature – a love, awe and respect for the natural world that is innate, although variably recognised and expressed.

Derived from the Ancient Greek words for ‘life’ and ‘love’, biophilia is an idea made well known by the biologist and author, E.O. Wilson (Wilson, 1984), who has described biophilia as *“the innately emotional affiliation of human beings to other living organisms”* (Wilson, 1993, p31).

The late Stephen Kellert wrote extensively on concepts of biophilia, especially exploring the understanding of biophilia in terms of human health and well-being. Kellert defined biophilia as *“the inherent inclination to affiliate with the natural world instrumental to people’s physical and mental health, productivity and well-being”* (Kellert, 2012, xii). Kellert also describes the term biophilia, as *“shaped”* by Wilson and himself, as *“a complex process encompassing an array of values and qualities that constitute a broader affiliation with nature”* and as *“reflect(ing) fundamental ways we attach meaning to and derive benefit from the natural world”* (Kellert, 2012, xii).

In a more practical sense, it is the understanding that contact with nature and experiences of thriving healthy nature in our everyday lives are essential for us to be *“healthy, happy, and productive and to lead meaningful lives”* (Beatley, 2016, p3).

### **Biophilic design**

Recognising the importance of this relationship with nature and its centrality to human health and well-being, biophilic design aims to translate the ideas and principles of biophilia into the built environment *“to enhance human health and well-being by fostering connections between people and nature in the built environment”* (Kellert, 2012, p75-6).

Principles of biophilic design are now well known in architecture and emphasise elements such as: natural light; natural ventilation; natural shapes, forms and patterns; experiences of nature in building design; visual and other sensory (such as sound and smell) connections with nature and natural systems; as well as very strongly valuing sense of place, belonging and connection with culture and community (Kellert *et al*, 2008; Browning *et al*, 2014).

Our innate aesthetic sense, an element of our biophilia, finds beauty in natural forms and patterns, such as in the grain of wood, flowing water, branching of a tree – including in patterns with varying fractal scales of complexity and order. We have a preference for views that include nature and find them restful and restorative. Psychologically, when we see other species such as plants thriving in a place we are reassured that it is a place that supports life and so is a safe and healthy place for us, and so we more positively engage with it. Similarly, we have a strong innate preference to have a view out over a natural, open landscape (a sense of prospect to survey the world and connect and orientate us to place and time of day) while at the same time a place for withdrawal where we feel safe, protected and not exposed (a sense of refuge)(Kellert *et al*, 2008; Browning *et al*, 2014).

Biophilic design helps make happy and productive workplaces; creates healing and comforting environments in hospitals; shapes schools where children thrive physically, emotionally and academically; and, supports well-being and community in homes and neighbourhoods. Biophilic buildings go well beyond ‘eco-building’ concepts of sustainable materials and energy efficiency, to

design that nurtures and cares for people, community and nature, and in doing so expresses the values of love, care and respect for nature as well as, reciprocally, allowing nature to nurture our own health and well-being.

### **Biophilic cities**

These ideas and principles of biophilic design naturally extend beyond individual buildings to the wider built environment and urban design and planning. Tim Beatley has written extensively on the idea of biophilic cities, researching examples from cities around the world, defining characteristics of a biophilic city, and his work provides some useful descriptions and definitions:

*“Biophilic Cities are cities that contain abundant nature; they are cities that care about, seek to protect, restore and grow this nature, and that strive to foster deep connections and daily contact with the natural world. Nature is not something optional, but absolutely essential to living a happy, healthy and meaningful life”* (Biophilic Cities, n.d.).

*“A biophilic city is a city abundant with nature, a city that looks for opportunities to repair and restore and creatively insert nature wherever it can. It is an outdoor city, a physically active city, in which residents spend time enjoying the biological magic and wonder around them. In biophilic cities, residents care about nature and work on its behalf locally and globally”* (Beatley, 2010, p2).

As an expression of the ideas and values of biophilia, it is the notion that cities can indeed be places of abundant nature, where native species and ecosystems thrive, where people cherish and celebrate nature, where threatened and endangered species are nurtured, and most significantly, it recognises that this healthy, thriving nature in our daily lives is essential for our own health and well-being (Beatley, 2010; Beatley, 2016; Beatley, 2017).

Biophilic cities are places where nature can thrive and prosper, and therefore where people can also thrive and prosper.

The Biophilic Cities network<sup>2</sup> is a growing affiliation of cities around the world that are committed to a biophilic approach and implementing biophilic ideas. In several publications by Tim Beatley, including Beatley (2010) and Beatley (2016), a number of biophilic cities, or expressions of biophilic urban initiatives, are comprehensively described - and by way of illustration, a few examples are summarised here briefly:

- **Singapore**, an extremely densely populated city-state, has been planting trees for more than half a century to extend its green cover and now, with the motto ‘Singapore – City in a Garden’, it is proud of and celebrates its land and marine biodiversity. It has an extensive network of paths and cycle trails that connects the city while allowing people to access and experience its lush tropical forests, including at canopy level. With about half of its land area dedicated to nature and green space, it also proactively provides a network of ecological pathways and corridors for species such as birds and butterflies to move through the city. Planted roof tops, green walls and vertical gardens are common and in some parts of the city there are mandatory requirements to at least replace greenery lost at ground level when developing land. Khoo Teck Puat hospital is one of many examples of biophilic buildings. Although a public, high-tech hospital, its campus has become a park as it has been designed and is run to enhance biodiversity. It has extensive plantings to support more than 100 species of butterflies and the lake developed on the hospital campus has more than 90 species of native fish, some of which are endangered species, while the hospital rooftop supports a community garden. In the Bishan-Ang Mo Kio wetland park, in a high-rise residential area of Singapore, the long, straight, concrete drainage canal (as are

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<sup>2</sup> See: <http://biophiliccities.org/>

typically found in so many cities) has been removed. In its place, the reconstructed river takes a meandering course through a restored wetland park that now supports 59 species of bird, 22 species of dragonflies and one otter – as well as providing an ecologically interesting amenity area for the residents of the adjacent high-rise apartments. In Singapore’s ‘Gardens by the Bay’ the 18 artificial tree structures (also known as the ‘super trees’) have become iconic symbols of the biophilic cities movement. The ‘super trees’, some of which are up to 16 storeys high, are densely planted with more than 200 species of tropical plants, including bromeliads and orchids.

- **San Francisco** has many features of a biophilic city and is known for its urban agriculture and waste minimisation and recycling performance. Very appropriately, given the city is named after St Francis of Assisi, it has many policies and initiatives to protect and support wildlife such as: protecting birds with building standards and glazing requirements to make high-rise buildings safer for birds (reducing bird collisions with buildings is especially important given San Francisco’s location on the Pacific Flyway for more than 250 species of migratory birds); supporting butterfly populations, including endangered species, with neighbourhood planting programmes and butterfly habitat corridors; protecting wild nature in the city and wider Bay Area such as mountain lions, coyotes, grey foxes; and, supporting the sea lion claim to Pier 39 – this urban sea lion colony has become an international tourist attraction but may also be watched on webcam<sup>3</sup>. San Francisco has become known for its parklets which are micro-parks such as created from the conversion of a parking space or median strip, bringing more green spaces into neighbourhoods, and helping urban streets become more social and community spaces. As with so many biophilic initiatives in cities around the world they are driven through volunteer and community support – something that is typically abundant in a city.
- **Oslo** highly values its natural environment including its Fjord-front position and surrounding forest. Two-thirds of the city’s municipal area is protected forest with an extensive network of trails for walking, cycling and, in winter, skiing and snowshoeing. The city has lakes for swimming and rivers for fishing and there are plans to restore eight rivers that flow through the city. Some of this restoration work involves daylighting of rivers which is the process where rivers that in the past have been buried under the city in pipes and canals are restored to the surface as healthy rivers and wetlands. With its trails, cycleways and well-developed public transport, 85% of children walk, cycle or use public transport to school.
- With its green roof bylaw **Toronto** requires some types of buildings to have a green roof and provides incentives and subsidies for other buildings to do so. These planted roofs have multiple benefits such as: providing habitat and food for birds and butterflies and fostering biodiversity and ecological connections for species to move across the city; improving air quality; reducing urban heat island effects; helping manage storm water run-off and improving its quality; and, enhancing the city-scape and urban views by adding beauty, life and interest to the city.
- The standard approach to dealing with city storm water issues, such as flooding and sewer overflows, is to build more and bigger pipes. As an example of a biophilic design solution to dealing with storm water, **Portland** created a network of green streets that were more permeable, have increased tree and vegetation planting, and use vegetated bioswales and planting strips alongside roads to absorb and buffer storm water flows. In helping solve flooding, sewer overflow and water pollution problems, this has also created habitat for birds and other species (bringing more nature into the city) and created lushly vegetated

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<sup>3</sup> See: <https://www.pier39.com/the-sea-lion-story/sea-lion-webcam/>

street environments for people to enjoy, with the additional benefit of the planted roadside buffer strips separating pedestrians and cars. An unexpected result has been the transformation of streets with more social space, changing how people view and use streets.

- From its origins as a grey, industrial city and now identified as an area of ecological restoration, the vision of **Birmingham** is to connect nature, health and the economy. Elements of the plan include its 8,000 allotment gardens, growing its tree canopy cover, its extensive 400 kilometres of small waterways forming a 'blue network', and a network of trails and pathways to make it a truly walkable city.
- **Anchorage** has more than 600 km of urban trails that can be used by walkers, cyclists, horse riders and, in the winter, skiers, snowshoers and dog mushers, and allows people to experience nature - including potentially encountering some of its population of 1,000 moose (in winter), 300 black bears and 65 brown bears. Anchorage residents value this nature in the city and although it can be a little problematic at times the view of the vast majority is that it is a treasure to be celebrated and it makes the city unique and special.
- **Melbourne** is described as an emerging biophilic city and has a stated goal of doubling its tree canopy (from about 20% to 40% by 2040). Recognising the measurable urban cooling value of every city tree, and promoting the benefits of green roofs, the city aims to reduce mortality from extreme heat events. In a rather unusual but successful approach to expressing biophilia, Melburnians enjoy that they can email any of the 77,000 trees in the city as each has its own email address. While some trees get love letters from their admirers, it also has the more pragmatic value of allowing citizens to report on the health of their favourite tree - for example, reporting if it has been damaged or needs attention of some sort.
- **Wellington** has committed to being a biophilic city. The city has extensive green belts and trails associated with its urban and suburban areas, while the Zealandia wildlife sanctuary provides a haven for native species, including endangered birds, within the city and allows bird species such as kākā (an at-risk but recovering species of native parrot)<sup>4</sup> to thrive and be seen across the city. Wellington's re-developed waterfront provides a unique and interesting social and commercial space with many biophilic features including public art such as giant kina sculptures. The Waitangi Park wetland provides habitat, treats city storm water through planted reed beds before it enters the sea, and adds to the greenness and public amenity value of the waterfront area. Protecting and restoring marine biodiversity around the city is now a focus of Wellington's 'Blue Belt' initiative. Making use of the impressive wind resources, the wind turbines on the surrounding hilltops not only make a small contribution to New Zealand's power generation (approximately 80% being from renewable sources) but also provide a powerful visual statement of hope of a renewable energy future where closer to 100% of the energy needs of cities, including for transport, come from renewable sources – an important aspiration for biophilic cities. Wellington's biophilic identity is well summarised on the city council website, *"Wellington's greatest strength as a city is our quality of life, and nature plays a big part of this. With our harbour, hills, wild coastline, and native flora and fauna all situated in close proximity to urban life, our connection to nature is a significant point of difference, benefitting us ecologically, economically, socially and culturally"* (Wellington City Council, n.d.).

Considering biophilic city initiatives from a public health perspective, there are clearly immediate benefits to health and well-being, as well as long terms benefits related to helping protect and

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<sup>4</sup> See: <http://nzbirdsonline.org.nz/species/kaka>

restore biodiversity, and mitigating and adapting to climate change. It is evident that the ideal and vision of a biophilic city is a city where both people and nature thrive – it is a city that:

- Nurtures, cherishes and celebrates native species, abundant nature and biodiversity;
- Prioritises repair, restoration, reconstruction and protection of land, marine and aquatic ecosystems in and around the city – and so, not only minimises its ‘impact on the environment’ but plans its development in a way that adds to, and actively enhances and restores nature, habitat and living ecosystems;
- Provides access to and experience of nature through walkways, walkable neighbourhoods, cycle trails and green corridors and so also shifts from car-dominated transport to instead structure itself around active transport and public transport networks;
- Actively encourages connection with community and culture and supports social cohesion and development of social capital, including for example through, building design and design of public spaces, engagement in and volunteering for restoration projects, creating urban social spaces, and communities being stewards of natural places;
- Is concerned about, and designs the equitable distribution of nature to ensure all may access and enjoy nature and its benefits for health and well-being;
- Is inspired by and mimics nature and this is reflected not only in public art, culture and urban form but also in that its buildings and transport systems are powered by renewable energy, and it minimises and recycles wastes;
- Has food systems that increasingly draw on locally and regionally produced foods including food produced within and around the city, in urban farms and gardens, urban food orchards, and community gardens, allotments and backyards;
- In terms of its food systems, energy systems and waste streams it constantly seeks ways to minimise its impact on local, regional and global ecosystems and wisely and actively implements innovations and new technologies that help achieve this; and,
- Aims to foster and support biophilic values and design in multiple scales and places such as from biophilic buildings, hospitals and schools, biophilic homes and backyards, streets and neighbourhoods, through to supporting biophilic regions.

In terms of human health and well-being the range of actual and potential benefits of biophilic cities are both self-evident and well-supported by research and, in broad terms, include: enjoyment of seeing, hearing, experiencing and inter-acting with healthy nature within cities; improved mental health including less anxiety and depression; improved food security and availability of healthier foods; improved walkability and a more active population with a healthier diet and less obesity, diabetes and cardio-vascular disease, respiratory illness and cancer; improved air quality and recreational water quality; more resilience to extreme events such as heat waves, heat island effects and floods; and, a range of possible cultural, educational and economic benefits.

Most interestingly, ‘biophilic thinking’ in various scales, whether it is a city-wide programme or network, a hospital or school, restored urban wetland or riparian network, is not a planned movement but a movement that is happening more or less spontaneously in different places and scales around the world. There is no doubt that it is a set of ideas and way of thinking for which the time has come, and that is emerging and gaining momentum on both small and grand scales. It is not only something that is happening, creating and discovering itself in the process, but also perhaps most importantly it is extremely practical, physically transforming places, while at the same time it is highly visionary, providing a coherent set of values and ideas that allow us to creatively re-imagine a different future where people and a richness of native species of plants and animals thrive in the urban landscape.

Biophilic cities are all at once a bold vision, a practical reality and a creative work-in-progress just beginning to get underway. Even more encouragingly, it is a movement in which all can engage

from the individual, to the small or large business or organisation, not-for-profit organisation, faith-based organisation, local government, national government, and multinational organisation. Biophilic ideas and thinking are scalable from the household to the global. Indeed, it is recognised that urban nature and ecosystems will always be relatively limited, modified, and not replace wilderness and that to have a real impact in slowing the current mass extinction of species we will also need bold global action such as the ‘Half-Earth’ idea proposed by E.O. Wilson that identifies specific rich and diverse wilderness and ecosystems comprising half the Earth’s surface area that need urgent protection, leaving the other half for human development (Wilson, 2016). Biophilic cities do not replace the need for this type of action. However, they may perhaps be one contributory pathway towards it as biophilic urban dwellers increasingly experience, understand and so care about nature, including nature beyond the city boundaries. It seems plausible that biophilic cities around the world would look at their regions and consider how they could partner with and support various ‘arks’ of rich and unique biodiversity such as the Serengeti, the Galapagos and Antarctica, to name a few of the most important identified by E.O. Wilson in his ‘Half-Earth’ proposal.

### **Biophilic public health**

Thinking from a public health perspective, biophilic design and biophilic cities could rightly be called examples of public health in action. Considering what seems to be the emergence of a wider biophilic movement, challenges and inspires us to rethink our models of public health theory and practice.

While we have largely overcome the decimating population health effects of infectious diseases of previous centuries, the greatest current challenges in public health relate to preventing and managing conditions such as obesity, diabetes, cardio-vascular disease, cancers and anxiety and depression. Now, in addition, the emerging and unprecedented future impacts on the health of populations relate to the effects of biodiversity loss, ecosystem degradation and collapse, degradation of land and water resources, and also the effects arising from the disruption and instability of the global climate system caused by greenhouse gas emissions.

Finding solutions to these ‘health’ and ‘environmental’ challenges has typically been seen as the remit of different fields, different sets of disciplines and different departments of government, even although their underlying drivers are often closely linked, and in many cases one and the same. Increasingly it is clear that mobilising to reverse ecological damage, restore Earth’s ecosystems and stem the haemorrhaging of biodiversity through species extinction, and stabilise the Earth’s climate is the greatest humanitarian mission to date. While some commentators may disagree with this anthropocentric view, it is the clear prerogative of public health to focus on human health and well-being. Indeed, as life on Earth will always thrive in one form or another it is the suitability of the Earth and its ecosystems for human habitation, health and well-being that is one of the key issues at stake.

Public health has been described as *“the art and science of preventing disease, prolonging life and promoting health through the organised efforts of society”* (Acheson, 1988). Lang and Rayner (2012) provide a brief history of the different approaches of public health over the years – each has arisen in response to the population health needs, challenges and technologies of the time. These range from the early sanitary engineering approaches providing sewerage systems and clean drinking water, and the regulatory approaches to tobacco control, to the biomedical interventions of antibiotics and immunisations, through to the current understanding of the social and economic determinants of health and disease. While all of these models and approaches have served, and often continue to serve, public health well in shaping interventions and producing gains in protecting and improving the health of populations, the authors go on to provide a succinct argument for the need for a new model of public health for the 21<sup>st</sup> century, described as ‘ecological public health’, stating in their concluding paragraph that *“public health*

*professions today need to think and act ecologically if they are to help reshape the conditions that enable good health to flourish” (Lang and Rayner, 2012, p20).*

However, while providing a strong conceptual argument for an ecological approach for public health, the authors provide little practical guidance as to what this looks like and how to do ‘ecological public health’. Similarly, the new field of ‘planetary health’ focuses on global health concerns related to climate change, energy use, food production, water resources, biodiversity and so on. While this is a valued and important development in public health research and thinking, it is not clear how a public health practitioner, or the average person in the street, can implement ‘planetary health.’ Concepts such as planetary public health, climate change, sustainability and environmental health are likely to all struggle to engage the hearts and minds of the population at large which is necessary to enable the scale and nature of change required to improve the health of the population ‘through the organised efforts of society’.

I would suggest that the new model for public health needed for the 21<sup>st</sup> century is one that is able to move beyond the 20<sup>th</sup> century ways of thinking. It is one that is defined by a transformation of our relationship with the natural world and that redefines how we view and measure human progress. Such a model of public health would draw on the concepts, values, theory and practicality of biophilic design and biophilic cities, and so align itself with, and discover its place in, the biophilic movement. This is an approach that speaks to human emotions and values, engages community action, and has the ability to address the global issues through practical application at the local level. There is clearly a role for this model of biophilic public health as an important and relevant contributor to the biophilic movement.

In the synergy that is biophilic public health, public health theory and practice would be enriched by the biophilic understanding of how human health and well-being are deeply connected to nature, the ability to engage hearts and minds and mobilise action through a compelling vision, and the practicality that comes through action at the scale of place. Biophilic thinking would help deepen our working conceptions of health and well-being, as not only that of the human body, but also of the mind and soul. The recently published *Oxford Textbook of Nature and Public Health – the role of nature in improving the health of a population* (van den Bosch and Bird, 2018) provides an excellent summary of how nature in our daily lives benefits our health. However, this evidence base for biophilic public health is probably in its fledgling state and there would be much to be gained from strengthened epidemiological research. Other key strengths of public health that would help shape biophilic public health, include its population-wide approach to improving health and its concern with equity. Very importantly, biophilic public health would advance the understanding of ecological health and well-being as a central human health concern, and in linking evidence with advocacy and policy, help facilitate and enable biophilic approaches to be more widely adopted.

### **What would biophilic public health look like?**

At its heart, biophilia is about the centrality of our emotional connections with nature to our health and well-being. It is about how valuing, appreciating and experiencing nature, plants, animals, ecosystems, natural landforms, natural elements and beauty, enriches and nourishes our lives. Perhaps most importantly, it is an idea and language that helps rediscover, redefine and transform our perception of nature where our relationship and interactions with the natural world become characterised by words such as ‘love and respect’, ‘nurture and care’, ‘wonder and awe’, ‘curiosity’, ‘reverence’, ‘exploration and mystery’ and ‘humility’ rather than ‘the environment’, ‘natural resources’ and ‘natural capital’. Therefore, biophilic public health would be defined by the love, awe and respect for nature – and ‘all things living’.

Biophilic public health would have a ‘Health for All’ approach where the ‘All’ is understood as health for humans, other species and ecosystems (de Wet, 2017), recognising the centrality of our

relationship with nature for our own health and well-being, while also respecting the intrinsic value and worth of other species.

One hallmark of the biophilic approach is that it typically produces multiple benefits for human health and well-being while at the same time for the health and well-being of nature. The practice of biophilic public health would therefore focus on initiatives that produce multiple benefits for the health and well-being of people, other species and ecosystems, both directly and indirectly, and both in the short term and long term, and for subsequent generations. Biophilic public health approaches would work with, and be inspired by, nature and supported and implemented at multiple interwoven scales from the local to the global, but with a strong focus on place. In practical terms biophilic approaches may be adopted by physically defined localities such as cities, schools, workplaces, hospitals and so on. Biophilic policies are a key mechanism to achieve biophilic action in places, however biophilic policies (such as healthy and sustainable food policies, or energy or transport policies) extend the influence well beyond the confines of a locality.

Biophilic public health would necessarily adopt a biophilic policy and places approach – but enable us to think beyond the way we already think about public health. For example, biophilic thinking in public health would allow us to not only focus on promoting healthy nutrition but imagine and support new approaches to local and regional production of healthy foods that have less impact on land, water and ecosystems and generate less greenhouse gas in production and transport; when it comes to drinking water quality and recreational water quality biophilic public health would include a focus on upstream catchment management and land use, riparian planting, and restoring ecosystems and wetlands; with biophilic thinking we would not simply think of green spaces in cities for recreation and physical activity but think of the potential for green spaces to be areas of active ecological restoration with an abundance of native species and important social and community space; and when it comes to active transport, biophilic public health would not only think about cycle trails and walkability of cities but also how cycle ways and footpaths provide opportunities to experience nature and explore healthy ecosystems; biophilic public health would embrace renewable energy technologies to power our cities and their transport systems, reshaping our transport infrastructure, changing our ideas of what streets are for and how street space can be used, and helping transform our city-scapes in the process.

Lang and Rayner (2012, p20) make the comment that, “*public health success is as much about imagination as evidence: challenging what is accepted as the so called normal, or business as usual.*” Public health has always been strong on evidence. Perhaps the most tantalising promise of biophilic public health is that it will ignite our imagination of what is possible.

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