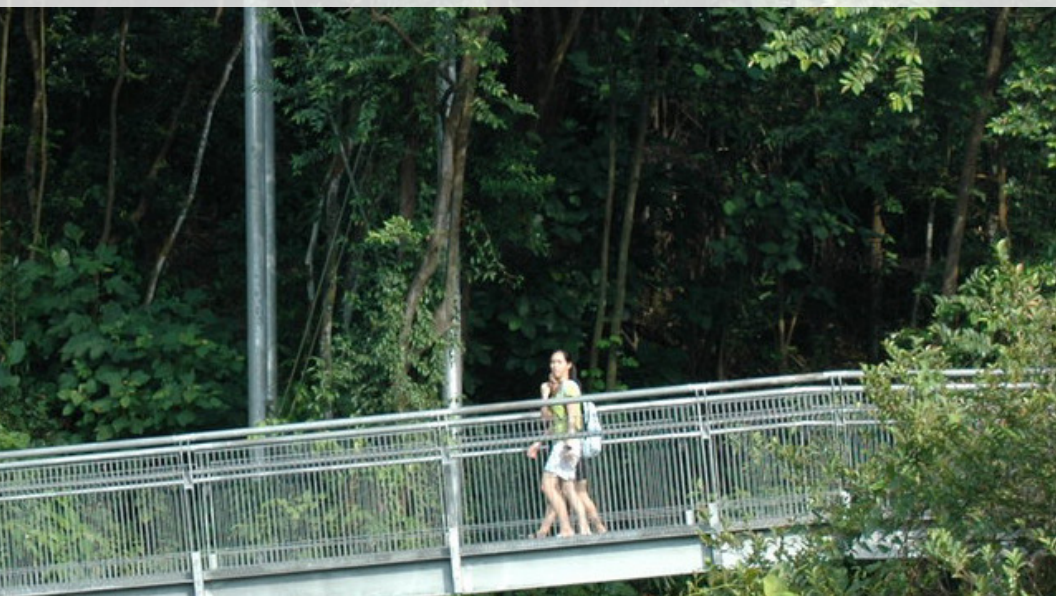


# BIOPHILIC CITIES SUMMIT

Singapore | October 17-19, 2019



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# Meet the hosts



**Biophilic Cities** partners with cities, scholars and advocates from across the globe to build an understanding of the importance of daily contact with nature as an element of a meaningful urban life, as well as the ethical responsibility that cities have to conserve global nature as shared habitat for non-human life and people.



**Dr. Tim Beatley** is the Founder and Executive Director of Biophilic Cities and the Teresa Heinz Professor of Sustainable Communities, in the Department of Urban and Environmental Planning, School of Architecture at the University of Virginia. His work focuses on the creative strategies by which cities and towns can bring nature into the daily lives of their residents, while at the same time fundamentally reduce their ecological footprints and becoming more livable and equitable places. Among the more than variety of books on these subjects, Tim is the author of Biophilic Cities and the Handbook of Biophilic City Planning & Design.

**The National Parks Board (NParks) of Singapore** is committed to enhancing and managing the urban ecosystems of Singapore's biophilic City in a Garden. NParks is the lead agency for greenery, biodiversity conservation, and wildlife and animal health, welfare and management. The board also actively engages the community to enhance the quality of Singapore's living environment.



**Lena Chan** is the Director of the National Biodiversity Centre (NBC), NParks, where she leads a team of 30 officers who are responsible for a diverse range of expertise relevant to biodiversity conservation. NBC initiatives include the development of the City Biodiversity Index, and the Pulau Tekong Coastal Protection and Mangrove Enhancement project. Lena is the National Focal Point for the Convention on Biological Diversity (CBD), and a member of the Genetic Modification Advisory Committee of Singapore, the Governing Board of the ASEAN Centre for Biodiversity, the Advisory Committee for the Cities and Biodiversity Outlook of the CBD, and the Biophilic Cities Advisory Board.



# Agenda

Day One | Thursday, October 17, 2019

- 8:00am** Transport to Singapore Botanic Gardens | *Oasia Hotel Downtown*
- 8:30am** Arrival & Registration | *Botany Centre, Singapore Botanic Gardens*
- 9:00am** Welcome from meeting co-hosts Biophilic Cities and NParks
- 9:30am** Presentation of the Singapore Index Workshop Outcomes  
*Lena Chan, NParks*
- 10:30am** Morning Break
- 10:45am** Overview of the Biophilic Cities Network Today  
*Tim Beatley, University of Virginia*
- 11:15am** Biodiverse Biophilic Cities  
*Peter Brastow, San Francisco Dept. of the Environment*  
*Grant Pearsell, City of Edmonton*
- 12:00 noon** Joint Lunch with SI Workshop and Biophilic Cities Summit
- 1:00pm** Keynote Lecture: Form Follows Systems  
*Mun Summ Wong, WOHA*
- 1:30pm** Convene Biophilic Cities Summit
- 2:15pm** Future Parks Accelerator  
*Nick Grayson, Birmingham City Council*  
*Julie Dewar, City of Edinburgh Council*
- 2:45pm** Biophilic Research  
*Zuzana Drillet, Singapore - ETH Centre*  
*Dan Richards, Singapore - ETH Centre*  
*Jie Yin, Havard T.H. Chan School of Public Health*
- 3:30pm** Afternoon Break
- 3:45pm** Boosting Bountiful Biophilia on a Bare-Bones Budget  
*Catherine Werner, City of St. Louis*
- 4:00pm** Biophilic Cities' Initiatives  
*Rebecca Kiernan, City of Pittsburgh*  
*Nina-Marie Lister, Ryerson University*  
*Tim Park, Wellington City Council*
- 5:00pm** NParks Evening Tour | *Singapore Botanic Gardens*
- 6:30pm** Dinner | *Raffles House at Fort Canning Park*

# Agenda

## Day Two | Friday, October 18, 2019

- 9:00am** Morning Site Tours | *departing from Oasia Hotel Downtown*  
Group 1: Kampung Admiralty and Sungei Buloh Wetland Reserve  
Group 2: Bishan Ang Mo Kio Park and Khoo Teck Puat Hospital
- 12:00 noon** Lunch break | *Sungei Buloh Wetland Reserve*
- 1:00pm** Afternoon Site Tours  
Group 1: Khoo Teck Puat Hospital and Bishan Ang Mo Kio Park  
Group 2: Sungei Buloh Wetland Reserve and Kampung Admiralty
- 4:15pm** Visit to Marina One
- 5:15pm - 8:30pm** Evening at Gardens by the Bay (Self-Guided)  
*See additional information on page 10*



## Day Three | Saturday, October 19, 2019

- 9:00am** Morning Site Tours | *Departing from Oasia Hotel Downtown*  
HortPark and Southern Ridges
- 12:00 noon** Lunch and Closing Remarks from Co-Hosts | *HortPark*
- 1:00pm** Summit Concludes | *Return Transportation to Oasia Hotel Downtown*

Thursday, October 17

**Singapore Botanic Gardens** were designated as a UNESCO World Heritage Site in 2015, making the site the first and only tropical botanic garden on the list. There are four core concepts by which the Gardens have been developed: Tanglin, representing the heritage of the garden; Central, the core of tourist activity; Bukit Timah, the educational and discovery zone; and Tyersall-Gallop, forming a forest habitat merged with an existing adjoining rain forest.



Sungei Buloh Wetland Reserve, Photo by NParks

Friday, October 18

**Kampung Admiralty** is noted for being Singapore's first integrated public development. It mixes public facilities and services into one complex conveniently meeting all needs of the aging population of Singapore. The idea was to create a "vertical village" with three stratum: Community Plaza, Medical Centre, and a Community Park with 104 apartments for seniors. The building is located near other amenities, such as healthcare and commercial activities. The public spaces have a variety of free programs, including childcare. The vertical village emphasizes natural daylight with views that connect people to nature.

**Sungei Buloh Wetland Reserve** was first developed in 1993 and further expanded in 2002. It is recognized for its contribution to migratory bird habitats. The reserve has over 202 hectares of mangroves, ponds, and forests with trails for visitors to immerse themselves in nature.

**Bishan An Mo Kio Park** is one of the largest urban parks, consisting of over 60-hectares. A key feature is the concrete canal which was transformed into a naturalized meandering river measuring over 3 kilometers in length through the Active, Beautiful and Clean Waters (ABC) Programme. Catering to children with special needs, the play facility is considered all-access for children of all abilities.

# Site Visits

**Kho Teck Puat Hospital** is a general and acute care hospital featuring lush greenery throughout the design. “Fins” along the building’s walls are designed to channel the prevailing north-east winds into the building, bringing the outdoors to patients. Sunshades over windows protect patients from harsh glares and redirect light toward the ceiling to brighten the wards and reduce energy use. Large fans in public areas are powered by solar panels on the roof. The air-conditioning system draws supply air from its internal courtyards, where the air is cooler, hence reducing the cooling loads.

**Marina One** is a mixed-use development with two, 34-story residential towers, two 30-story prime grade A office towers and a retail podium named ‘The Heart’, featuring lush greenery and landscaping by Gustafson Porter and ICN Design. It brings life to Singapore’s ‘City in a Garden’ concept with a unique garden ecosystem within the development, providing a sanctuary and green space for communities amid the hustle and bustle of the Central Business District.



HortPark, Photo by NParks

## Saturday, October 19

**HortPark** is part of Southern Ridges and serves as a showcase for the horticulture industry’s latest best practices, products and services. Robust programs raise awareness of the importance of connecting with the earth among gardeners of all ages.

**Southern Ridges** connects Mount Faber Park, Telok Blangah Hill Park, HortPark, Kent Ridge Park and Labrador Nature Reserve making it a must-see for nature enthusiasts for its various flora and fauna. Henderson Waves is the highest pedestrian bridge in Singapore known for his artistic design. The Forest Walk and Canopy Walk are immersed in the Adinandra Belukar (secondary forest)

# Speakers



**Peter Brastow** has worked to restore nature and biodiversity in San Francisco since the mid-1990s. After graduate school in geography at UCLA, Peter worked for ten years for the National Park Service at the Presidio of San Francisco, Golden Gate National Recreation Area, restoring dunes, wetlands and coastal grasslands for rare plants and wildlife. Peter founded Nature in the City in 2005, the first and only organization wholly dedicated to restoration and stewardship of the Franciscan bioregion and to connecting residents and nature. Since 2012, Peter has served the City of San Francisco as the Senior Biodiversity Coordinator at the Department of Environment promoting local biodiversity policies and programs in City government. Currently, Peter is convening 15 city agencies to implement a biodiverse city vision.



**Julie Dewar** is Senior Planning Officer with the City of Edinburgh Council. Working on biodiversity and green infrastructure and designated sites policy for the City. Regularly advising on development management casework for developments across the City. She is a previous Chair of the Edinburgh Biodiversity Partnership and a member of the Edinburgh Living Landscape Board and Future Parks Accelerator Project Team.



**Zuzana Drillet** is an environmental scientist with background in landscape-ecological planning and ecological research of temperate ecosystems. Zuzana's former research is linked to comparative ecology of cities and urban greenery indicators, social indicators, inclusive city planning and smart city approaches. Her recent research spans across topics related to tropical urban ecosystem services, urban vegetation, ecological traits of tropical trees and people's perception of ecosystem services in urban settings. Zuzana's current role is project coordinator of Ecosystem Services in Urban Landscapes Project at Singapore-ETH Centre (SEC).



**Nick Grayson** is Climate Change and Sustainability Manager for Birmingham City Council, with a current lead on green infrastructure and natural capital; where he has devised the draft 'Naturally Birmingham' UK local authority governance model- which seeks to put nature at the heart of all decision-making, providing the framework for a 25 Year Environment Plan and the Future Operating Model for all public parks. He is also a Senior Research Fellow at the University of Birmingham commencing a 5 year study in January 2019 as Principal Investigator on "WM-Air" - on the benefits from green infrastructure to urban air quality across the West Midlands.

# Speakers



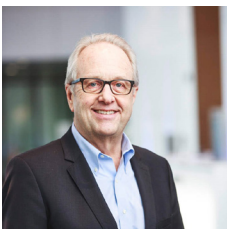
**Rebecca Kiernan** is a Principal Resilience Planner with the City of Pittsburgh, where she focuses on building social, ecological, economic, and physical resilience to city-wide shocks and stresses. Rebecca was previously Sustainability Coordinator for the Township of Moon, worked in coastal livelihoods restoration in Indonesia, and has 7 years of experience in education and facilitation. She holds a BA in education from SUNY Geneseo, and an MS in Public Policy and Management with a focus on Environmental Policy from Carnegie Mellon University. She's a board member of the Three Rivers Waterkeepers and serves on Pittsburgh's City's Shade Tree Commission.



**Nina-Marie Lister** is Graduate Program Director and Associate Professor in the School of Urban + Regional Planning at Ryerson University in Toronto where she founded and directs the Ecological Design Lab, a collaborative innovation incubator for ecological design research and practice. She is the author and editor of more than 40 professional practice and scholarly publications and her work has also been widely featured in international exhibitions. She was recently named an "Inspired Educator" by the Canadian Green Building Council's excellence and leadership awards, and in 2017, Lister was nominated among Planetizen's Most Influential Urbanists.



**Tim Park** is an ecologist who has been working with local government in NZ for 20 years. He has a background in applied restoration ecology and is focused on inspiring local communities to restore native forest, coastal ecosystems and wetlands. Currently Tim's role is Environment Partnership Leader at Wellington City Council. Working with partner organizations, Tim has been instrumental in establishing Predator Free Wellington and Forest in the Heart of Wellington projects, both of which are enabling rewilding of urban ecosystems through community action.



**Grant Pearsell** is a Registered Professional Planner (RPP) from Edmonton, Alberta, Canada. His specialty is strategic planning to achieve urban biodiversity goals. He has led multi-disciplinary teams over the past 20 years that have developed the City of Edmonton's award winning ecological planning system. He is currently a Director in the City Planning Branch at the City of Edmonton and leads a team of 50 staff. Grant has an interdisciplinary education in civil engineering technology, environmental studies, urban design, and urban and regional planning.



# Speakers



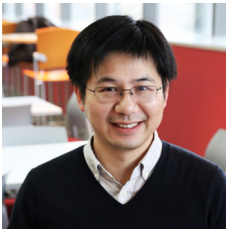
**Dan Richards** studied Biology at the University of Exeter before moving to the University of Sheffield to do a PhD in ecosystem services and floodplain habitat restoration. He worked as a Research Fellow at the National University of Singapore on mangrove conservation and ecosystem services before joining ETH Zurich's research programme in Singapore. Dan is Principal Investigator for Natural Capital Singapore – the first national scale assessment of Singapore's ecosystems and the benefits they provide to people.



**Catherine Werner** has 30 years of experience in the field of sustainability and natural resources. She is the first Sustainability Director for the City of St. Louis, where she works on triple bottom line sustainability initiatives. She spearheaded the development of an award-winning Sustainability Plan for the City of St. Louis, and has been instrumental in launching several successful sustainability efforts. Prior to working for the city, Catherine worked in the fields of environmental law, sustainable development, and natural resource conservation. Catherine is a LEED Accredited Professional, obtained her J.D. from Washington University School of Law, and her undergraduate degree from Duke University, with an A.B. in the field of political science.



**Mun Summ Wong** is the co-Founding Director of WOHA, an international award-winning architectural practice based in Singapore that has gained global recognition for its integration of environmental and social principles, and its distinct approach to biophilic design and integrated landscaping. He is a Professor in Practice at the National University of Singapore at the Department of Architecture, School of Design & Environment. He sits on the Nominating Committee of the Lee Kuan Yew World City Prize and other design advisory panels in Singapore.



**Jie Yin** is a Postdoctoral Research Fellow in the Department of Environmental Health at the Harvard T.H. Chan School of Public Health. Dr. Yin's research interests lie in the cross-disciplinary field of urban planning/design and public health. He is now working on quantifying the health impacts of biophilic design and nature contact by using virtual reality, eye-tracking, bio-monitoring sensors and spatial analysis. Before going to Harvard, he spent eight years working on eco-city theory and rural sustainable development at Tongji University and Shanghai Tongji Urban Planning & Design Institute. As a certified urban planner in China, Dr. Yin has led several award-winning projects on environmental planning, urban/rural design, land-use planning and community design.

# Gardens by the Bay

5:15pm - 8:30pm | Friday, October 18

Pick up and drop off will be near the Golden Garden, directly inside the main entrance. There are a variety of dining options available inside the park. Scan the QR code for a digital map. (Requires mobile data / WiFi connection.)

## Recommended Activities

- Flower Dome and Cloud Forest | Last admission at 8:30pm daily
- Light Show at Supertree Grove | 7:45pm and 8:45pm daily



## Biophilic / Sustainable Features

- The dragonfly and kingfisher lakes naturally filtrate and are considered an extension of the Marina Reservoir. Reed beds help to slow water flow, filter sediments and take in nutrients. This helps to maintain a healthy aquatic ecosystem.
- Buildings incorporate vertical and rooftop greenery, helping to disperse the urban heat island effect.
- The supertrees utilize photovoltaic cells to harvest solar energy to light up the trees at night.
- Horticultural waste from parks and gardens in Singapore are incinerated to generate power for the conservatories. Gases from the incinerator pass through a chimney installed in a special supertree, and the resultant hot air is expelled into the atmosphere.

*Free Wi-Fi (GBTB-FreeWifi)  
is available at Flower Dome,  
Cloud Forest, Supertree  
Grove, Golden Garden, Far  
East Organisation Children's  
Garden and Floral Fantasy*

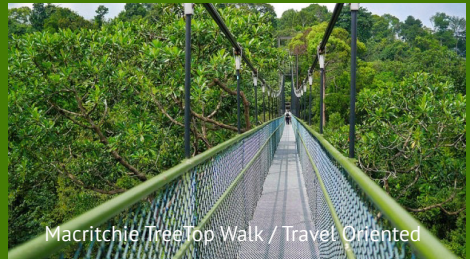


# Singapore: A Biophilic City in a Garden

Welcome to Singapore! If you have extra time, here are some biophilic places we recommend you see.

## Changi Airport

- Jewel - a mixed-use complex inspired by Singapore's reputation as "The City in a Garden".
- Rain Vortex - a seven-story waterfall that pumps some 10,000 gallons of water per minute.
- Shiseido Forest Valley - a four-story terraced forest surrounding the Rain Vortex. Over 900 trees and some 60,000 shrubs create the illusion of a natural valley, wound through with nature trails that dip and rise a vertical height of 100 feet
- Cactus Garden - The roof-based and home to more than 100 species of cacti and arid plants from around the world.
- Water Lily Garden - Shaped like a water lily leaf, it features tiled walkways that are home to a variety of lilies.
- Orchid Garden - More than 700 moth, butterfly, and spider orchids.
- Sunflower Garden - Features different varieties grown in the Airport's nursery. At night it is a light-filled retreat. Spotlights and firefly lights bring magic to the sunflowers and other plants after dark.



## Hiking and Nature Trails

- Chestnut Nature Park
- St John's Island
- Dairy Farm Nature Park
- Coney Island
- Southern Ridges
- Macritchie TreeTop Walk
- Green Rail Corridor
- Sungei Buloh Wetland Reserve
- Kranji MarshesTr
- Fort Canning Park
- Bukit Timah Nature Reserve
- Windsor Nature Park
- Botanic Gardens' Rainforest Walking Trail
- Tampines Eco Green
- Changi East Boardwalk
- Pulau Ubin's Chek Jawa
- Punggol Waterway
- Upper and Lower Peirce Reservoirs
- Labrador Park
- Bukit Batok Nature Park



The 2019 Biophilic Cities Summit is made possible thanks to our generous Singapore host, NParks.

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