

# Evolving Singapore into a City in Nature

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Bringing Nature to Cities

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# The Singapore Context: City – State – Island



A small island with limited land resources to meet the needs of both a city and a country

High population density in Singapore coexists with rich biodiversity

Need to cater to and balance the needs of both





## A list of Singapore's native biodiversity

- **2145** native vascular plant species
- **414** bird species
- **109** reptile species
- **85** freshwater fish species
- **334** butterfly species
- **122** dragonfly species
- more than **800** spider species
- **35** true mangrove tree species
- **12** seagrass species
- **255** hard coral species
- **200** sponge species

0 5 10 20 km



Water  
Non-vegetated  
Mangrove Vegetation  
Scrubland  
Young Secondary Forest  
Old Secondary Forest  
Primary Forest  
Swamp Forest  
Freshwater Marsh



# From “City in a Garden” to “City in Nature”

Restoring nature back into the city for liveability, sustainability and well-being

## Garden City to City in a Garden

50 yrs of greening

- Intensifying tree planting
- Strengthened connectivity of parks and greenery with PCN
- Integrated greenery with built environment



## City in Nature – A New Paradigm

Truly unique value proposition where people and nature come first:

- Integrate ecology into the urban landscape
- Create sustainable ecosystems for nature and people to thrive
- Provide immersive experiences with nature for improved health well being
- Build communities of stewards



# Singapore's "City in Nature" Framework

## Applying Nature-Based Solutions

### Outcomes

Sustainable  
Economic  
Growth

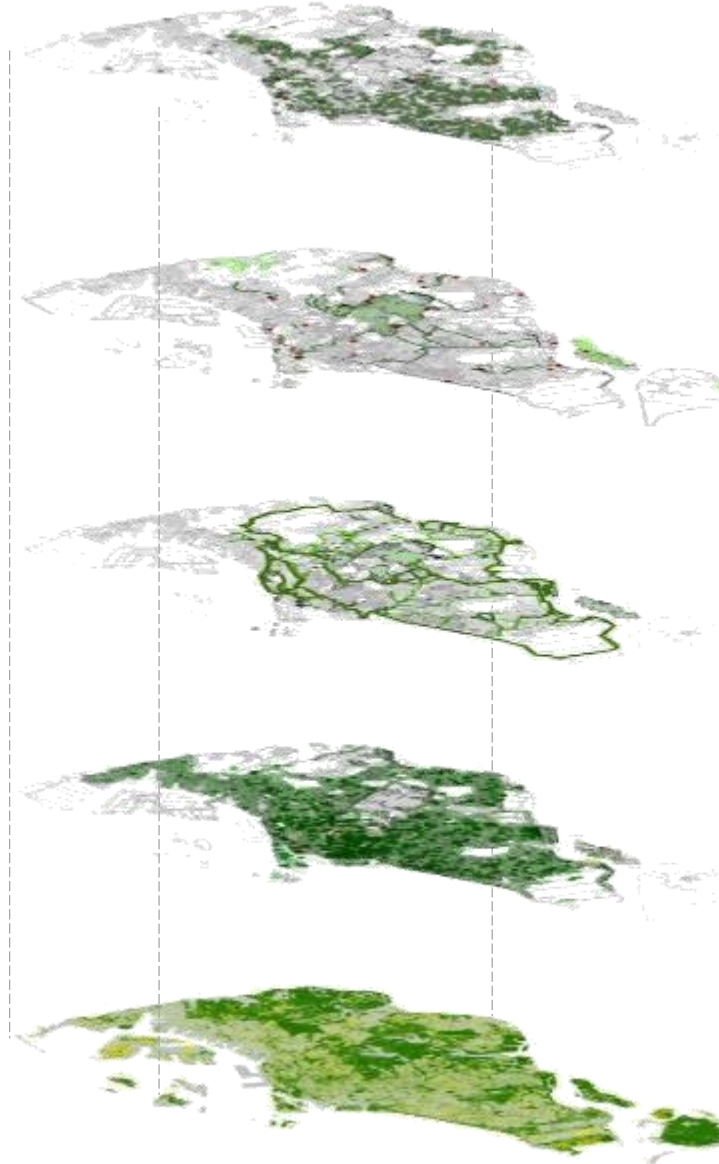
High Liveability

Ecological  
Resilience

Climate  
Resilience

Social  
Resilience

Underpinned by biophilic systems and design



Social layer



Ecological layer



Recreation layer



Greenery layer

Green Cover  
(base layer)



# Safeguard and strengthen core areas





# Safeguard and strengthen core areas





# Safeguard and strengthen core areas





# Wildlife in the City





# Migratory Birds





# Spawning of hard corals





# Marine Turtles





# Develop ecological connections





# Develop ecological connections



Roadside trees



# Develop ecological connections



East Coast Parkway



# Develop ecological connections



Kampung Admiralty



# Develop ecological connections



ParkRoyal@Pickering



# Habitat Enhancement and Restoration



Learning Forest, Singapore Botanic Gardens



# Habitat Enhancement and Restoration

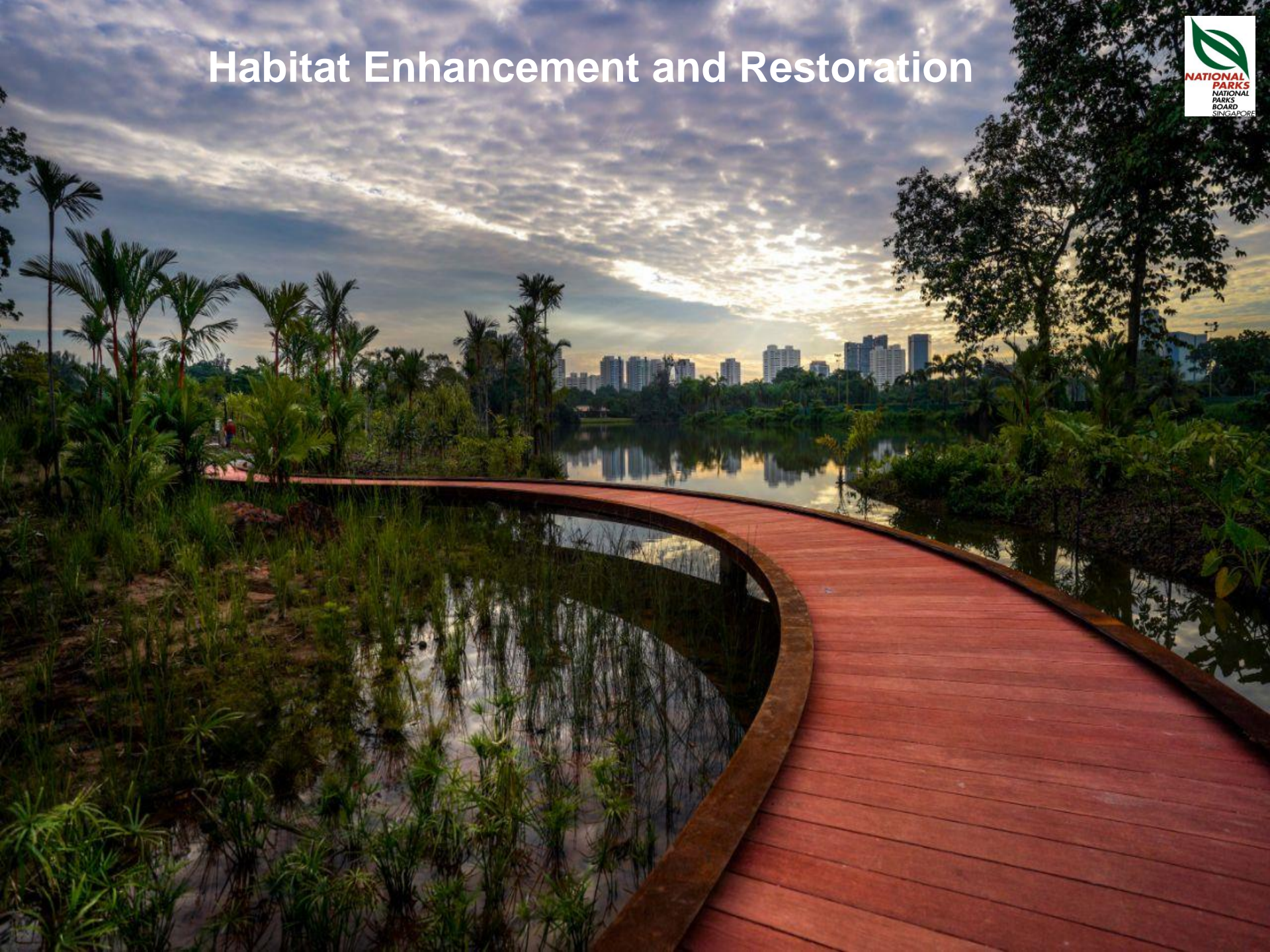


Bishan-Ang Mo Kio Park





# Habitat Enhancement and Restoration



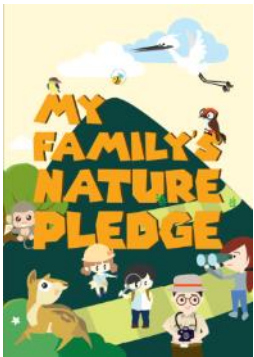


# Community Stewardship

## Nurturing a Biophilic Community – Citizen Science in Action – Community In and With Nature

### Families

- Family Nature Pledge



### Citizen Scientists

- NParks Garden Bird Watch
- NParks Butterfly Watch
- Heron Watch
- Malayan Water Monitor Lizard Count
- Shorebird Sighting Records
- Seagrass Monitoring with TeamSeaGrass
- Reef Monitoring with Blue Water Volunteers
- NParks BioBlitz
- Intertidal Monitoring Singapore (iTideSG)



- Green schools for biodiversity
- Ecotoxicology Marine Bio-monitoring programme
- Nature Way monitoring



### Schools

- Nature Outreach Workshops
- Biodiversity week for schools
- Seashore Ambassador Programme





# Community Stewardship and Outreach in Nature





# Everyone has a Role to Play

## *One Million Trees Campaign led by Community*





## City in Nature – a more Gracious and Caring Society



HortPark Nature Playgarden



# SINGAPORE INDEX ON CITIES' BIODIVERSITY (CITY BIODIVERSITY INDEX) – AN UPDATED VERSION WILL BE PUBLISHED SOON

- Self monitoring tool for cities to evaluate their urban biodiversity conservation efforts

- Developed in collaboration with SCBD and Global Partnership on Local and Subnational Action for Biodiversity



SINGAPORE INDEX ON CITIES' BIODIVERSITY			
PART I – Profile of the City	<u>Location</u> and size (geographical coordinates (latitudes and longitudes); climate (temperate or tropical); rainfall/ precipitation (range and average); area and include map or satellite image, and define city boundaries)		
	<u>Physical features of the city</u> (geography, altitude of the city, area of impermeable surface, information on brownfield sites, etc.)		
	<u>Demographics</u> (including total population and population density of the city; the population of the region could also be included if appropriate, and for the purpose of placing it in the regional context)		
	<u>Economic parameters</u> (Gross Domestic Product (GDP), Gross National Product (GNP), per capita income, key economic activities, drivers and pressures on biodiversity)		
	<u>Biodiversity features</u> (ecosystems found in the city, species found in the city, quantitative data on populations of key biodiversity indicators, relevant qualitative biodiversity data)		
	<u>Administration of biodiversity</u> (Relevant information include agencies and departments responsible for biodiversity; how natural areas are protected (through national parks, nature reserves, forest reserves, secured areas, parks, etc., references to Aichi Biodiversity Targets)		
<u>Links</u> to relevant websites including the city's website, environmental or biodiversity specific websites, websites of agencies responsible for biodiversity			
PART II - Indicators	Core Components	Indicators	Maximum Score
	Native Biodiversity in the City	1. Proportion of Natural Areas in the City	4 points
		2. Connectivity Measures	4 points
		3. Native Biodiversity in Built-up Areas (Bird Species)	4 points
		4. Change in Number of Vascular Plant Species	4 points
		5. Change in Number of Bird Species	4 points
		6. Change in Number of Butterfly Species	4 points
		7. Change in Number of Species (any other taxonomic group selected by the city)	4 points
		8. Change in Number of Species (any other taxonomic group selected by the city)	4 points
		9. Proportion of Protected Natural Areas	4 points
		10. Proportion of Invasive Alien Species	4 points
	Ecosystem Services	11. Regulation of Quantity of Water	4 points
		12. Climate Regulation: Carbon Storage and Cooling Effect of Vegetation	4 points
		13. Recreation and Education: Area of Parks with Natural Areas	4 points
		14. Recreation and Education: Number of Formal Education Visits per Child Below 16 Years to Parks with Natural Areas per Year	4 points
	Governance and Management of Biodiversity	15. Budget Allocated to Biodiversity	4 points
		16. Number of Biodiversity Projects Implemented by the City Annually	4 points
		17. Existence of Local Biodiversity Strategy and Action Plan	4 points
		18. Institutional Capacity: Number of Biodiversity-related Functions	4 points
		19. Institutional Capacity: Number of City or Local Government Agencies Involved in Inter-agency Cooperation Pertaining to Biodiversity Matters	4 points
		20. Participation and Partnership: Existence of Formal or Informal Public Consultation Process	4 points
		21. Participation and Partnership: Number of Agencies/Private Companies/NGOs/Academic Institutions/International Organisations with which the City is Partnering in Biodiversity Activities, Projects and Programmes	4 points
		22. Education and Awareness: Is Biodiversity or Nature Awareness Included in the School Curriculum	4 points
23. Education and Awareness: Number of Outreach or Public Awareness Events Held in the City per Year		4 points	
PART III - Calculation	Native Biodiversity in the City (Sub-total for Indicator for 1-10)		40 points
	Ecosystem Services (Sub-total for Indicators 11-14)		16 points
	Governance and Management of Biodiversity (Sub-total for Indicators 15-23)		36 points
	Maximum Total:		92 points



THANK YOU



## Singapore – A Biophilic City in Nature



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