

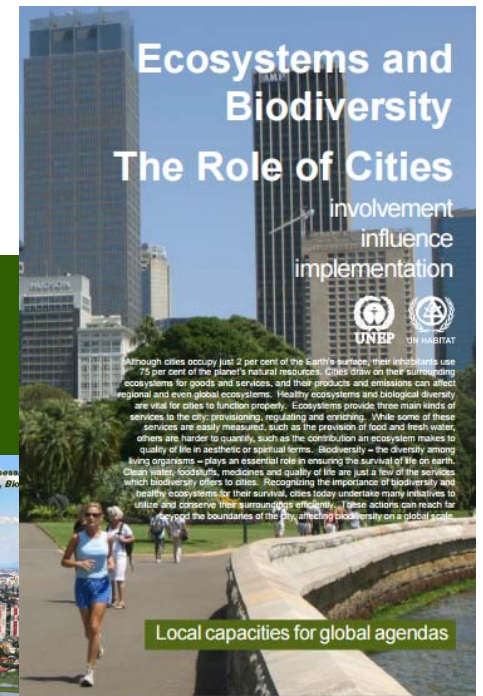
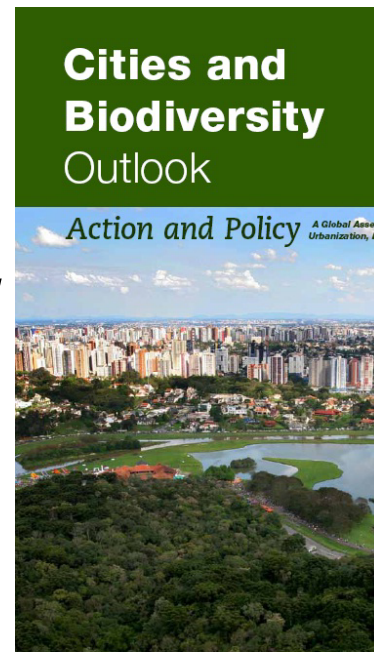
Singapore Index on Cities' Biodiversity

Cheo Pei Rong
National Biodiversity Centre
National Parks Board, Singapore
EAS Congress 2015 (19 November 2015)



Cities, Biodiversity & Sustainability

- Biodiversity exists in cities and contributes to quality of life and cities' sustainability
- Links between urbanisation, biodiversity, ecosystem services and economic, social and environmental sustainability
- 10 Key Messages (examples):
 - Rich biodiversity can exist in cities
 - Enhance human health, well-being, food and nutrition security
 - Contribute to climate change mitigation and adaptations
 - Integration in urban policy and planning
 - Take the lead in sustainable development



Stockholm Resilience Centre
Research for Development of Societal Resilience



ICLEI
Local Government
Sustainability



<https://www.cbd.int/authorities/doc/cbo-1/cbd-cbo1-book-f.pdf>

The Singapore Index on Cities' Biodiversity (**SI**) is a **CBD-led collaboration** with the Global Partnership on Local and Sub-National Action for Biodiversity.

www.cbd.int/authorities

What is the Singapore Index?

- Tool to help city governments **evaluate/monitor** their biodiversity conservation efforts.
- Objectives:
 - To assist national governments and local authorities in **benchmarking** their biodiversity conservation efforts in the urban context.
 - **Evaluate progress** in reducing the rate of biodiversity loss in urban ecosystems.
- Key Features:
 - Self-assessment tool
 - Easy to apply
 - Scientifically credible
 - Objective and fair



Development of the Singapore Index

- Proposed by Singapore in 2008 at the High-Level Segment of the ninth meeting of Conference of the Parties (COP) to the Convention on Biological Diversity (CBD).
- Collaborated with the CBD and the Global Partnership on Local and Subnational Action for Biodiversity
 - Three experts workshops:
Feb 2009, July 2010, Oct 2011
- Endorsed in October 2010 at the tenth meeting of the COP to the CBD.
- Held 2 ASEAN workshops to promote application.
 - April 2010 and June 2014



Framework

○ Part I: Profile of the City

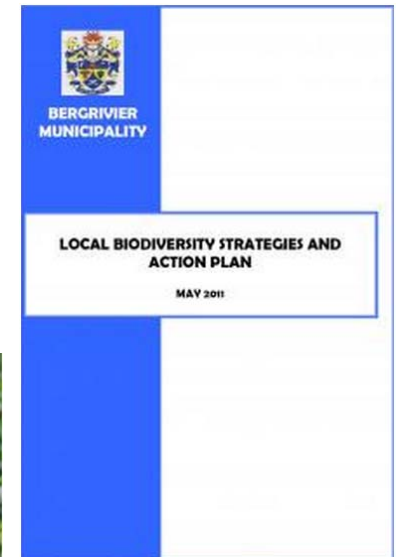
- Location and size
- Physical features of the city
- Demographics (total population, density)
- Economic parameters (GDP, GNP, key economic activities)
- Biodiversity features (ecosystems, species)
- Administration of biodiversity (management authorities, laws, rules)
- Links to relevant websites



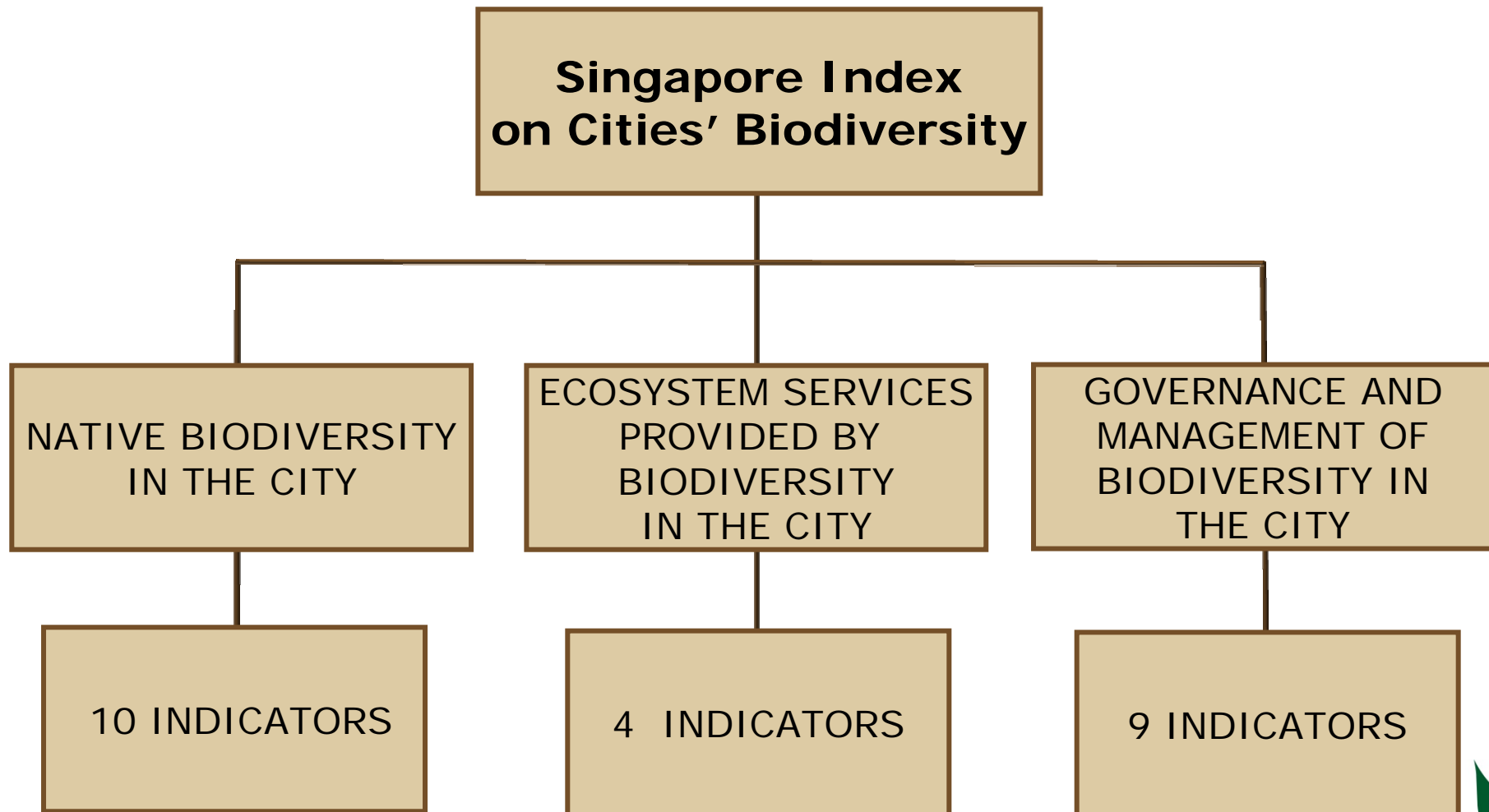
Framework

○ Part II: Indicators of the Singapore Index

- Native Biodiversity in the City
- Ecosystem Services provided by Biodiversity
- Governance and Management of Biodiversity

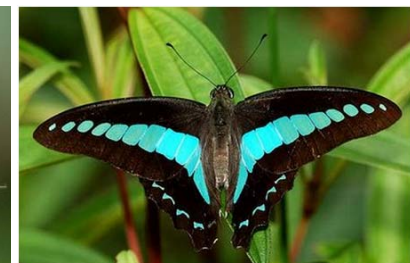


Indicators



Indicators: Native Biodiversity

NO.	INDICATORS
1	Proportion of Natural Areas in the City
2	Connectivity Measures or Ecological Networks to Counter Fragmentation
3	Native Biodiversity in Built-up Areas
4	Change in Number of Vascular Plant Species
5	Change in Number of Bird Species
6	Change in Number of Butterfly Species
7	Change in Number of Species (taxonomic group selected by city)
8	Change in Number of Species (taxonomic group selected by city)
9	Proportion of Protected Natural Areas
10	Proportion of Invasive Alien Species




Indicators: Ecosystem Services

NO.	INDICATORS
11	Regulation of Quantity of Water
12	Climate Regulation: Carbon Storage and Cooling Effect of Vegetation
13	Recreation and Education: Area of Parks with Natural Areas
14	Recreation and Education: Number of Formal Education Visits Per Child Below 16



Indicators: Governance & Management

NO.	INDICATORS	
15	Budget Allocated to Biodiversity	
16	Number of Biodiversity Projects Implemented by the City Annually	
17	Existence of Local Biodiversity Strategy and Action Plan	
18	Institutional Capacity: Number of Biodiversity-related Functions	
19	Institutional Capacity: Number of City or Local Government Agencies Involved in Inter-agency Cooperation Pertaining to Biodiversity Matters	
20	Participation and Partnership: Existence of Formal or Informal Public Consultation Process	
21	Participation and Partnership: Number of Agencies/ Private Companies/ NGOs/ Academic Institutions/ International Organisations with which the City is in Partnership in Biodiversity Activities, Projects and Programmes	
22	Education and Awareness: Is Biodiversity or Nature Awareness Included in the School Curriculum	
23	Education and Awareness: Number of Outreach or Public Awareness Events Held in the City per Year	

User's Manual on Singapore Index

CBI	INDICATORS	VARIABLES	SCORE
Native Biodiversity	INDICATOR 1: PROPORTION OF NATURAL AREAS IN THE CITY		
	<p>RATIONALE FOR SELECTION OF INDICATOR</p> <p>Natural ecosystems harbour more species than disturbed or man-made landscapes, hence, the higher the percentage of natural areas compared to that of the total city area gives an indication of the amount of biodiversity there. However, a city by definition has a high proportion of modified land area and this is factored into the scoring.</p> <p>Taking into account the inherent differences in the richness in biodiversity of tropical versus temperate regions, new versus mature cities, large versus small cities, developing versus developed countries, it was agreed at the Third Expert Workshop on the Development of the City Biodiversity Index that the working definition of "natural areas" is as follows:</p> <p>Natural areas comprise predominantly native species and natural ecosystems, which are not, or no longer, or only slightly influenced by human actions, except where such actions are intended to conserve, enhance or restore native biodiversity.</p> <p>Natural ecosystems are defined as all areas that are natural and not highly disturbed or completely man-made landscapes. Some examples of natural ecosystems are forests, mangroves, freshwater swamps, natural grasslands, streams, lakes, etc. Parks, golf courses, roadside plantings are not considered as natural. However, natural ecosystems within parks where native species are dominant can be included in the computation.</p> <p>The definition also takes into consideration "restored ecosystems" and "naturalised areas" in order to recognise efforts made by cities to increase the natural areas of their city. Restoration helps increase natural areas in the city and cities are encouraged to restore their impacted ecosystems.</p>	<p>HOW TO CALCULATE INDICATOR</p> <p>$(\text{Total area of natural, restored and naturalised areas}) \div (\text{Total area of city}) \times 100\%$</p> <p>WHERE TO GET DATA FOR CALCULATIONS</p> <p>Possible sources of data on natural areas include government agencies in charge of biodiversity, city municipalities, urban planning agencies, biodiversity centres, nature groups, universities, publications, etc. Google maps and satellite images can also provide relevant information for calculating this indicator.</p>	<p>BASIS OF SCORING</p> <p>Based on the assumption that, by definition, a city comprises mainly man-made landscapes, the maximum score will be accorded to cities with natural areas occupying more than 20% of the total city area.</p> <p>0 points: < 1.0% 1 point: 1.0% – 6.9% 2 points: 7.0% – 13.9% 3 points: 14.0% – 20.0% 4 points: > 20.0%</p>

<https://www.cbd.int/authorities/doc/Singapore-Index-User-Manual-20140730-en.pdf>

Current Application

- As of October 2015, **25 cities** have applied the SI.
- User's Manual translated into French, Chinese, and Thai.
- Draft translations by partners available in German, Portuguese, Japanese and Vietnamese.



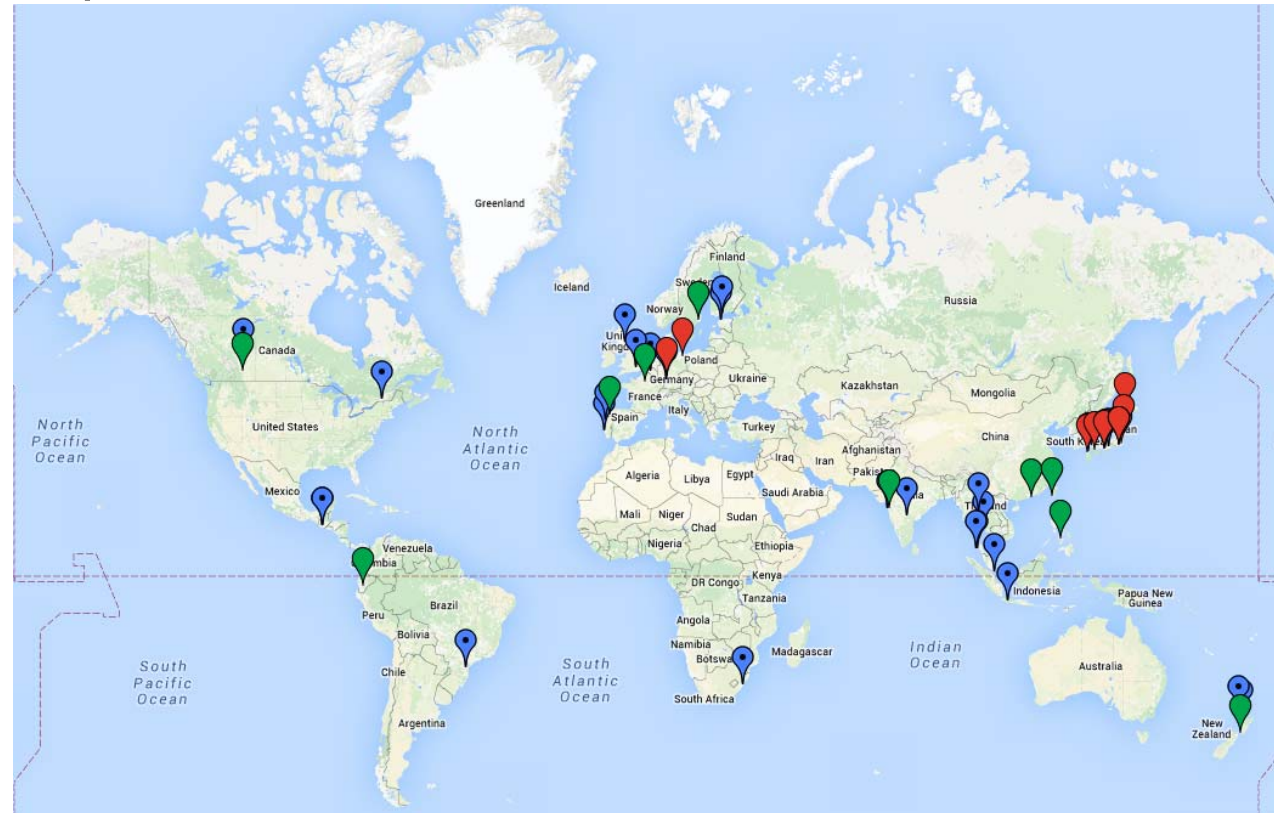
Cities that have applied SI



Cities where SI was applied by academics



Cities that are in the process of applying SI



tinyurl.com/SI-Cities



Cities that have applied SI

Country	City
Belgium	Brussels
Brazil	Curitiba
Canada	Edmonton
Canada	Montreal
Estonia	Tallinn
Finland	Helsinki
Germany	Heidelberg
Guatemala	La Antigua Guatemala
India	Hyderabad
India	Mira-Bhayandar
Indonesia	Bandung/West Java
Japan	Nagoya
New Zealand	Auckland/Waitakere
New Zealand	Hamilton
Portugal	Lisbon
Portugal	Porto
Singapore	Singapore
South Africa	Durban
Spain	Vitoria-Gasteiz
Thailand	Bangkok
Thailand	Chiang Mai
Thailand	Krabi
Thailand	Phuket
UK	Edinburgh
UK	London



Cities where SI was applied by academics

Country	City
Germany	Frankfurt
Japan	Tokyo
Japan	Yokohama
Germany	Neubrandenburg
Japan	Chiba
Japan	Fukuoka
Japan	Hiroshima
Japan	Kawasaki
Japan	Kitakyusyu
Japan	Kobe
Japan	Kyoto
Japan	Osaka
Japan	Sapporo
Japan	Sendai



Brussels



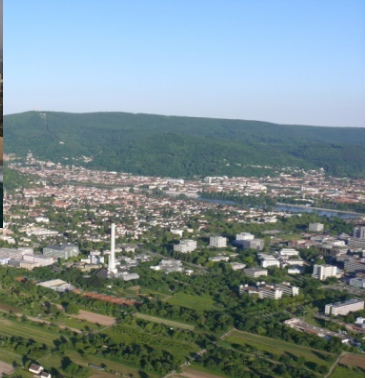
Cities that are in the process of applying SI

Canada	Calgary
China	Hong Kong
Ecuador	Cuenca
France	Paris
India	Thane
New Zealand	Wellington
Philippines	Iloilo
Spain	Ourense
Sweden	Stockholm
Taiwan	Kaoshiung



Mira Bhayandar

tinyurl.com/SI-Cities

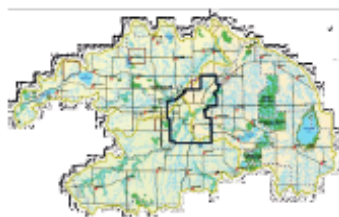


Examples of City Fact Sheet

The city of Edmonton in Alberta, Canada sits at an elevation of 668m. It has a temperate climate with average daily temperatures ranging from -11.7°C in January to 17.6°C in July. The city experiences an average of 28 days below -20°C and 3 days above 30°C. The city's average annual precipitation is 478.9mm with most of this being rain rather than snow.

Edmonton occupies 689.8km² of the Capital Region, a 8,427km² area comprising 6 cities, 11 towns, 4 municipal districts, 3 villages and 1 specialised municipality. Edmonton's 812,201 residents form the majority of the Region's population base of 1.18 million. At 1,181 persons/km², it is much denser than the Region (123 persons/km²). The city enjoys a real GDP of CAD 38.8 billion and real per capita income of CAD 47,000. Key economic sectors include education, health services, public administration along with manufacturing and professional services that support the oil and gas sector.

EDMONTON



Application of Singapore Index on Cities' Biodiversity

NATIVE BIODIVERSITY

Edmonton lies in a deciduous transition zone between the northern boreal forest and southern grasslands. About 10% of its land base is made up of natural areas, including much of the North Saskatchewan River Valley and ravine systems that divide the city, wetlands and forests. Edmonton's ecological network resides within a larger regional network that extends into neighbouring municipalities. Forests and wetlands within developed areas support diverse urban wildlife.

Edmonton's ecosystem comprises forests (mostly aspen and balsam poplars), wetlands (mostly marshes and fens), and riverine/riparian systems (the North Saskatchewan River). Its native species count includes 487 vascular plants, 178 birds, 66 butterflies, 27 freshwater fishes and 47 mammals.



The Way We Green

In 2012, Edmonton City Council approved *The Way We Green* - the City's award winning environmental strategic plan. The importance of biodiversity to residents' well-being is central to this plan, which is one of six integrated high-level plans. The high priority Edmontonians place on biodiversity is reflected in *The Way We Green*'s first goal which states: "Edmonton is full of nature - a place where in the course of everyday life, residents experience a strong connection with nature."

The Implementation plan for *The Way We Green* (approved by City Council in October 2012) includes a suite of performance measures and indicators to monitor the desired outcomes of the plan and supporting strategies. The Singapore Index has been chosen as one of the principal biodiversity outcome measures.



GOVERNANCE AND MANAGEMENT OF BIODIVERSITY

The Office of Biodiversity coordinates the City of Edmonton's protection of its network of river valleys, ravines, wetlands and tree-stands. It partners City Branches namely Urban Planning and Environment, Drainage Services, Transportation, Corporate Properties, Current Planning, Community Services, and Waste Management. Edmonton also partners myriad community organisations on biodiversity protection initiatives, and supports community stewardship of natural areas through its Master Naturalist Programme.

Edmonton's biodiversity-related efforts include dedicating reserve lands to protect habitats from development, management approaches supporting the natural function of the landscape, and land purchase and donation programmes (e.g. the Edmonton and Area Land Trust (EALT)) that help secure unprotected natural areas. An important biodiversity protection tool is the designation of the Environmental and Municipal Reserve.

Upon subdivision, landowners must provide to the City Municipal Reserve (MR), land equal to 10% of the total developable land area to be used as public park, public recreation area, schools or to separate lands used for other purposes. For the protection of natural areas on the tablelands above the river valleys and ravines, MR can be used to a maximum of 2% of the developable land base (i.e. up to 20% of the available 10% MR). Environmental Reserve may be claimed for steep slopes and lands subject to flooding.

Edmonton's Natural Areas Reserve Fund, Wetland Acquisition Fund and Parkland Purchase Reserve Fund are dedicated to the purchase of natural areas. The city is also one of 6 partners in the EALT which is a non-profit charity dedicated to protecting natural areas. Conservation easements, which is the voluntary dedication of private land to a qualified land trust agency or organisation such as the EALT play a crucial role in the conservation of urban natural areas.

Findings on the Application of the Singapore Index

1. Natural areas and constructed wetlands make up 7,180ha (including North Saskatchewan River), or 10.3% of the City's area.
2. To be determined based on revised formula.
3. Baseline data: 102 bird species in built-up areas.
4. Baseline data: 487 vascular plant species.
5. Baseline data: 178 bird species can be found in the Edmonton region.
6. Baseline data: 66 butterfly species.
7. Baseline data: 27 freshwater fish species.
8. Baseline data: 47 mammal species.
9. Edmonton has 3,714ha of secured natural area, comprising 5.3% of total city area (69,979ha).
10. There are 41 invasive plant species in Edmonton. Therefore the proportion of invasive species as opposed to native species is 7%.
11. There are 49,174.9ha of permeable surfaces, comprising 70.3% of total city area.
12. Edmonton's tree canopy constitutes 10.5% of total city area.
13. Edmonton provides 8.7ha of natural coverage per 1,000 persons.
14. Systematic collection is not currently undertaken as all natural areas are open to the public for free. However, it is estimated that there were 2,239 visits in 2009.
15. The budget for the parks function makes up 4% of Edmonton's total annual budget.
16. A total of 43 biodiversity-related projects were implemented between 2009 and 2010.
17. Several of Edmonton's LRSAP elements align with Canada's NBSAP, including integrated urban planning, public education and engagement, and improving ecological management capacity.
18. Biodiversity-related institutions include the Royal Alberta Museum, John Janzen Nature Centre, Muttart Conservatory, Valley Zoo, Devonian Botanic Garden, City of Edmonton River Valley/ Forestry/ Environmental Services Lab.
19. City or local government authorities involved in inter-agency cooperation include Urban Planning and Environment (includes Office of Biodiversity), Drainage Services, Current Planning, Transportation Planning, Edmonton and Area Land Trust, Community Services, River Valley Alliance, North Saskatchewan Watershed Alliance.
20. Edmonton's Public Involvement Policy (C-513) is implemented with every major new plan. The Natural Areas Advisory Committee advises on matters pertaining to biodiversity and natural areas protection.
21. Edmonton works closely with agencies and community partners (including the Master Naturalist Program, Edmonton and Area Land Trust, Edmonton BioKit project and "Learning the Language, Learning the Land" project) to achieve common biodiversity goals.
22. The Alberta curriculum includes aspects of biodiversity throughout elementary and secondary grades.
23. Edmonton runs or substantially contributes to the organisation of approximately 225 outreach events annually.

Native Biodiversity in the City

Ecosystem Services

Governance and Management Of Biodiversity



City Contact:
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Global Partnership on Local and Sub-national Action for Biodiversity

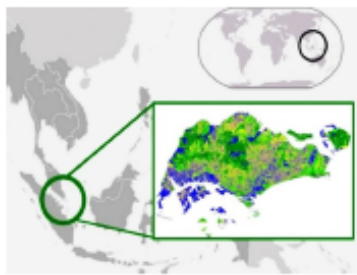
Examples of City Fact Sheet

The city-state of Singapore lies off the southern tip of the Malay Peninsula, 137km north of the equator. Singapore enjoys a tropical, humid, inter-monsoonal climate influenced by the northeast monsoon (Oct-Mar) and the southwest monsoon (Apr-Sep) with temperatures ranging from 23°C to 32°C and an annual rainfall of 2,340mm.

With a total land area of 714.3km², Singapore has a population of just over 5 million and a population density of 7,257 persons/km². It enjoys a GDP of SGD 326.8 billion and per capita income of SGD 63,050. Its key sectors are banking and finance, shipping, aviation and aerospace, chemicals, petrochemicals and petroleum refining, drilling equipment, offshore platform construction and entrepôt trade.

SINGAPORE

Application of Singapore Index on Cities' Biodiversity

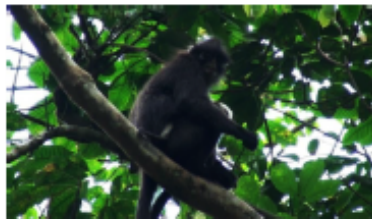


NATIVE BIODIVERSITY

Despite having one of the highest population densities in the world, a study conducted showed that Singapore's total greenery cover increased from 35.7% in 1986 to 46.5% in 2007. Its ecosystems include primary and secondary forests, shrubland, grassland, wetlands, seagrass and coral reef. The number of native species for selected groups are as follows: 2,053 vascular plants, 321 birds, 295 butterflies, 255 hard corals and 34 freshwater fish. Since the early 1990s, public interest in biodiversity and nature conservation has grown. There has been increasing collaboration among the government, NGOs and the private sector.



Sungei Buloh Wetland Reserve, one of Singapore's 4 Nature Reserves is an important stopover for migratory birds.



The banded leaf monkey is one of only 3 species of non-human primates native to Singapore.

Hornbill Conservation Programme

Since 2005, the National Parks Board (NParks) has been overseeing the recovery programme of the native Oriental Pied Hornbill in Singapore in partnership with National University of Singapore, Nanyang Technological University, the Wildlife Reserves Singapore and Nature Society Singapore.

Last recorded formally in the mid-19th century, it was presumed to be nationally extinct until 1994 when a breeding pair was found in Pulau Ubin, an offshore island northeast of mainland Singapore.

Key steps of the programme include habitat protection and the provision of extra nesting sites. Individuals have since been spotted around the central parts of Singapore, including the Singapore Botanic Gardens. Research has also unveiled many interesting facts about the hornbill, such as feeding patterns and survival rates. Breeding has occurred several times on mainland Singapore, and NParks anticipates further spread of these enigmatic birds.



GOVERNANCE AND MANAGEMENT OF BIODIVERSITY

The National Parks Board (NParks) oversees the management of biodiversity and protection of Singapore's natural habitats within parks and four Nature Reserves. In addition, NParks maintains 9,431ha of land comprising 54 Regional Parks, 243 Neighbourhood Parks, and more than 150km of Park Connectors as well as roadside trees. NParks

receives its mandate from the National Parks Board Act 2005 and the Parks and Trees Act 2005. Fauna in other parts of Singapore are protected by the Wild Animals and Birds Act 1965 under the Agri-Food and Veterinary Authority. The two agencies work closely to coordinate management and enforcement efforts.

1. Natural areas make up 29% of the total city area.
2. The effective mesh size is 1599ha.
3. Baseline data (2007): 30 bird species in built-up areas.
4. Baseline data (2009): 2,145 native vascular plant species.
5. Baseline data (2007): 321 bird species.
6. Baseline data (2010): 295 butterfly species.
7. Baseline data (2009): 255 hard coral species.
8. Baseline data (2008): 34 freshwater fish species.
9. Protected natural areas form 33.5km² or 4.69% of the total city area.
10. Singapore has 10 invasive alien bird species. Therefore, the proportion of invasive alien species as opposed to native species is 3%.
11. The total permeable area in Singapore is 63.2%.
12. Singapore has 31.9% tree canopy cover.
13. Singapore provides 0.75ha of park space per 1,000 persons.
14. In 2010, Singapore recorded 566 educational visits by children under 16 to parks and Nature Reserves.
15. In 2010, Singapore spent SGD 227 million or 0.6% of its budget on biodiversity-related administration.
16. In 2010, Singapore initiated 79 biodiversity-related projects.
17. There is a NBSAP/LBSAP in place.
18. Singapore has 7 institutes with biodiversity-related functions: National Biodiversity Centre, Raffles Museum of Biodiversity, Singapore Zoo, Singapore Botanic Gardens, Singapore Herbarium, Jurong Bird Park and Underwater World Singapore.
19. Singapore has 10 agencies involved in inter-agency cooperation on biodiversity issues, including National Parks Board, Urban Redevelopment Authority, National Environment Agency, Housing Development Board and PUB (Singapore's national water agency).
20. Singapore has an informal process for consultation on development projects, where an Environmental Impact Assessment may be required.
21. Singapore has 66 biodiversity-related agencies in cooperation, including agencies, private companies, NGOs, academic institutes and international organisations.
22. NParks offers biodiversity-oriented programmes as part of the non-academic Programme for Active Learning (PAL), implemented in all primary schools in Singapore. Students participating in NParks' Kids for Nature programme learn about the country's natural heritage.
23. Singapore conducted 1,340 biodiversity related events in 2010.

Findings on the Application of the Singapore Index

Native Biodiversity
in the City

Ecosystem
Services

Governance and Management
Of Biodiversity




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<http://www.nparks.gov.sg/en>




Global Partnership on Local and Sub-national Action for Biodiversity




An Example: Helsinki, Finland

**City of Helsinki**


<http://www.hel.fi/www/helsinki/en/housing/nature/biodiversity/cbi-en>




CITY ADMINISTRATION




SOCIAL SERVICES AND HEALTH CARE




MAPS AND TRANSPORT



DAYCARE AND EDUCATION



CULTURE AND LEISURE



HOUSING AND ENVIRONMENT

HOUSING AND ENVIRONMENT » NATURE AND GREEN AREAS » BIODIVERSITY

BIODIVERSITY

Natural environments

Cultural environments

Special features of nature in the city

Benefits of nature

Nature database

ENVIRONMENTAL PROTECTION DEPARTMENT

Viikinkaari 2a
00790 Helsinki
P.O. Box 500, 00099 City of Helsinki
09 310 1635
[Read more](#)

PUBLIC WORKS DEPARTMENT, HELSINKI

Kasarmikatu 21
00130 Helsinki
P.O. Box 1500, 00099 City of Helsinki
[Read more](#)

City Biodiversity Index

The City Biodiversity Index, also known as the Singapore Index, is an index that measures the biodiversity of urban nature. Developed as a result of international cooperation, the purpose of the index is to offer tools for the protection of urban biodiversity. It is meant to serve as a tool with which cities can evaluate the development of their native biodiversity. The development work is coordinated from Singapore.

The CBI is composed of 23 indicators, which are divided into three Core Components: native biodiversity, ecosystem services and governance. Each indicator is scored on a range of 0–4. This was the first time that the indicators were scored in Helsinki. In the future, the index is meant to be calculated every four years.

The scoring only took into account those indicators for which a score could be calculated. Helsinki achieved a total score of 58/96. The indicators on native biodiversity yielded a score of 17/44. The score for ecosystem services was 11/16, while governance earned a score of 30/36.

Based on the index, the state of biodiversity management in Helsinki is good. The city has retained much of its native biodiversity, and has plenty of recreational areas relative to the population. The city also has a moderate amount of permeable surfaces. The number of ecologically damaging invasive alien species is low.

However, only a small number of Helsinki's many natural areas are protected, and the city's network of natural areas is disconnected. Furthermore, there is only little monitoring data available for the indicators on native species, and some of the data is out of date.

THE ORIGINAL NATURE

Nature areas

Ecological networks

Birds in urban areas

Plants

Butterflies

Fish

Bats

Birds

Saprophytes

Protected nature areas

Alien species

ECOSYSTEM SERVICES

Impermeable surfaces

Canopy cover

Recreation areas

Fieldtrips

ADMINISTRATION





Biodiversity budget

Biodiversity projects

Politics, rules, regulations

Institutional capacity

Interdepartmental co-operation



An Example: Helsinki, Finland

Indicator 1: Nature areas

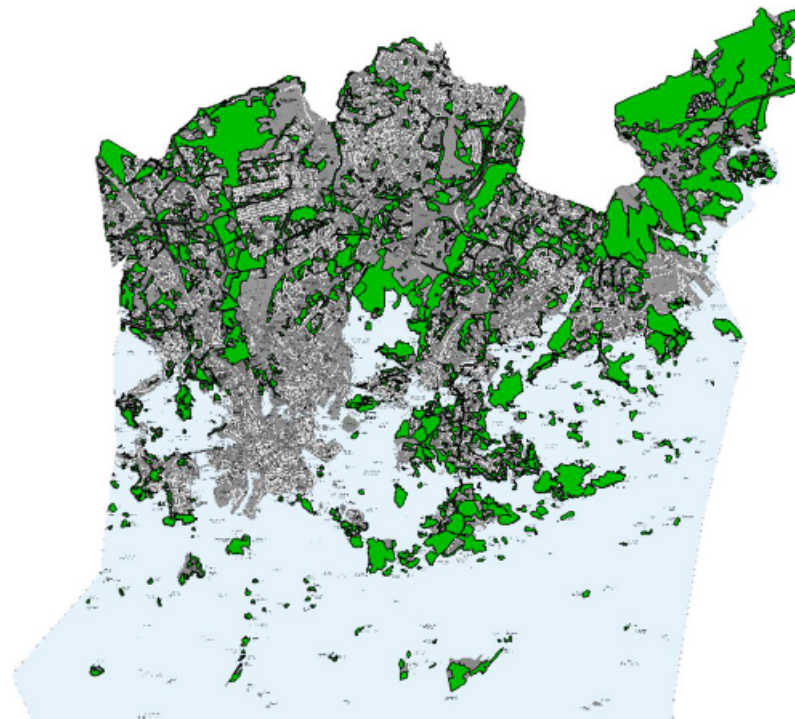


Figure: Helsinki's nature areas. The urban core stands out clearly as an area where there are only few nature areas. On the other hand, the areas of Sipoo that were annexed to Helsinki in 2009, the largest protected areas and Central Park stand out as broad and quite contiguous nature areas. The southernmost islands lie outside the range of this figure. (Figure: Milja Heikkinen, Map © Real Estate Department, Helsinki 2015)

Status:

The Nature Areas database, comprising natural and slightly disturbed areas, as well as areas in which anthropogenic activities are aimed at the conservation and enhancement of biodiversity. The database is based on previous databases and the examination of aerial photographs¹. The indicator value was calculated by comparing the area of nature areas with the surface area of the city. The calculation was performed both including and excluding the area of the sea. The area of the sea in the city of Helsinki is considerably large, at over 500 km². Because sea areas can be considered as being 99% natural, the total proportion of nature

Indicator 3: Birds of Built-up Areas

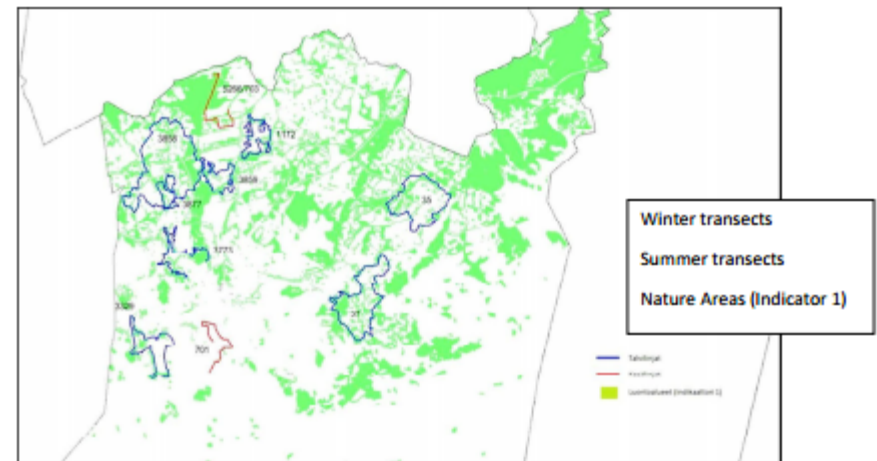


Figure: Transects used for bird surveys. The green spaces are the same as those shown for Indicator 1. The blue lines represent winter transects and the red lines represent summer transects. Bird transect surveys have not been conducted in the inner city, for instance. This figure has been produced by Mikko Kivikoski and Tanja Lindholm for the CBI survey of 2013.

Status:

The value for this indicator is based on a survey conducted in 2013. There are no annual transect surveys of the avifauna of the urban area that include both overwintering and breeding species. The data for this indicator was obtained from the winter bird surveys conducted by the Natural History Museum during the winter 2012–2013 and individual breeding bird surveys conducted during the 2000s. Not all of the included survey transects were exclusively within the urban area.

Score:

- 0 points: < 19 bird species
- 1 point: 19 - 27 bird species
- 2 points: 28 - 46 bird species
- 3 points: 47 - 68 bird species
- 4 points: > 68 bird species

Monitoring:



Figure: Mew gulls in Helsinki city centre. Gulls have learnt to exploit urban areas for nesting and for scavenging for food, which has led to conflicts in the Kauppatori market, for instance. (Photographer: Mika Rokka)

Potential Other Applications

- As a diagnostic, planning and decision-making tool
- As the biodiversity component of broader indices/ frameworks
- Good practices for sustainable development
- Capacity-building in biodiversity conservation for cities

Thank you.

For more information, please contact:

Singapore_Index@nparks.gov.sg