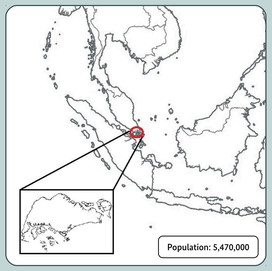
Singapore
Progress towards the 2020 Aichi Biodiversity Targets



Singapore has been making great efforts in biodiversity conservation under the framework of Singapore's National Biodiversity Strategy and Action Plan (NBSAP), which was developed in 2009 and comprises five strategies. The following are some examples of Singapore's efforts in this area vis-a-vis the implementation of the Strategic Plan of Action for Biodiversity 2011-2020 and the achievement of Aichi Biodiversity Targets.

Singapore is an island city-state in Southeast Asia, located at the southern tip of the Malaysian peninsula, and consists of one main island and 46 smaller islands. Located within the Sundaland biodiversity hotspot, Singapore has a rich array of native biodiversity in numerous habitats, despite its small size. Singapore currently has four legally gazetted Nature Reserves and 20 other administratively protected Nature Areas that cover the majority of natural habitats within Singapore such as primary dryland forest, tall secondary forest, freshwater swamps, rocky shores, mangroves, mudflats, seagrass beds and coral reefs.

At just 718.3 sq km, Singapore is one of the most densely populated countries in the world, with a population of 5.47 million and a population density of 7,615 persons per sq km. This unique situation presents considerable challenges for biodiversity conservation, as Singapore has to constantly balance numerous competing needs within this small area.

Acronyms

CIN	Community in Nature
FOB	Festival of Biodiversity
IAS	Invasive Alien Species
NBSAP	National Biodiversity Strategy and Action Plan
NCMP	Nature Conservation Master Plan
NGO	Non-governmental Organisations
NParks	National Parks Board
SWCDC	Southwest Community Development Council
URA	Urban Redevelopment Authority

A

NBSAP Strategy 4 - Enhance Education and Public Awareness: Numerous efforts are being made to reach out to the public, such as the Community in Nature initiative, the annual Festival of Biodiversity.

NBSAP Strategy 2 - Consider Biodiversity issues in Policy and Decision-making: The City in a Garden vision has been recognised at the highest levels, and land use planning takes biodiversity into consideration; such as the designation of Nature Areas. The Sustainable Singapore Blueprint 2015 has biodiversity components and sets targets for 2030.

NBSAP Strategy 2 - Consider Biodiversity Issues in Policy and Decision-making: Singapore is primarily a consumer or transportation hub in the supply chain. Efforts towards sustainable consumption are in the areas of recycling and energy use.

Festival of Biodiversity

The annual Festival of Biodiversity (FOB) is a flagship outreach event inaugurated in 2012 by Singapore's President Tony Tan Keng Yam. It is an annual signature community outreach event organised by the Biodiversity Roundtable (a group of stakeholders within the nature community, including NParks) for the conservation of Singapore's Natural Heritage

The Festival's main aim is to communicate the importance of biodiversity and its conservation to the members of the public that are least likely to have contact with it, in a setting that maximises exposure to the target demographic. It brings together government, private sector, academia and nature interest groups to showcase native biodiversity over the course of one weekend every year. The event typically involves about 100 volunteers from 40 partner organisations comprising nature groups, biodiversity experts, schools, corporate organisations and government agencies.

President Tony Tan views the exhibits at the Festival of Biodiversity in 2013

B

NBSAP Strategy 1 - Safeguard Our Biodiversity: Singapore's commitment to protecting our natural areas can be seen in the designation of two new Nature Areas and the launch of the Sisters' Islands Marine Park. Some measures to improve habitat connectivity include the Eco-Link@BKE and Nature Ways and there are numerous habitat enhancement efforts in parks.

NBSAP Strategy 1 - Safeguard Our Biodiversity: Various alien species are present in Singapore, but have yet to demonstrate significant impact to biodiversity. Initial steps have been taken to identify species and pathways, with some limited attempts at control measures.

NBSAP Strategy 1 - Safeguard Our Biodiversity: Singapore designated our first Marine Park in 2014, the Sisters' Islands Marine Park,which is intended to protect marine habitats and support species conservation programmes. Singapore also developed and implements Integrated Urban Coastal Management to encourage sustainable development of the coastal environment .

Eco-Link at Bukit Timah Expressway (Eco-Link@BKE)

The Eco-Link at Bukit Timah Expressway (Eco-Link@BKE) completed in 2013, is an ecological bridge built to re-establish ecological connectivity between the Bukit Timah Nature Reserve and the Central Catchment Nature Reserve, which were separated by an expressway in 1983. In 2011, construction began on the Eco-Link@BKE, an hourglass-shaped overhead ecological corridor 50 m wide at its narrowest point, and this was completed in 2013 at a total cost of S$17 million. Native plants have been planted on the bridge to encourage its use by animals, and it is hoped that eventually animals on both sides will cross the Eco-Link to take advantage of the habitats on the opposite side. The Eco-Link would also assist with the exchange of genetic materials between the two Nature Reserves, particularly for some rare native plants such as the Singapore durian (Durio singaporensis) and the Singapore walking stick palm (Rhaphalobalste singaporensis) which are pollinated and dispersed by animals.

Seeds that may be carried across by animals using the Eco-Link

C

NBSAP Strategy 1 - Safeguard Our Biodiversity: Efforts under this strategy include identification of specific sites with biodiversity significance, such as the habitat ranges of endangered animals. The Sisters' Islands Marine Park is Singapore's first marine park, and the two new Nature Areas recently designated under the URA Parks and Waterbodies Plan (2014) are all indicative of Singapore's efforts towards this target. In addition, NParks' Nature Conservation Master Plan includes a thrust that is focussed on safeguarding areas with significant biodiversity, and this will also contribute towards this target.

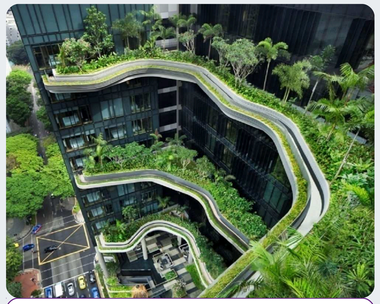
NBSAP Strategy 1 - Safeguard Our Biodiversity: Under the Species Recovery programmatic plan of NParks' Nature Conservation Master Plan, threatened species are identified and prioritised based on endemism, conservation status and habitat range. This will help to guide actions towards increasing populations of the species identified.

Sisters' Islands Marine Park

Singapore's first marine park, encompassing Sisters' Islands and the western reefs of Pulau Tekukor and St. John's Island, was announced during the Festival of Biodiversity (FOB) in July 2014. The establishment of this 40 ha park will help protect a variety of Singapore's marine habitats such as coral reefs, sandy shores and seagrass meadows, which are inhabited by various rare and endangered species of marine life. It will serve multiple roles and functions, particularly outreach, education, conservation and research. The marine park will give Singaporeans a first-hand experience of our rich coastal and marine biodiversity through guided tours and volunteer programmes. Restoration activities such as nurseries for iconic marine organisms are also in place, such as the reintroduction of giant clams. In 2014, when some lagoons off Pulau Semakau landfill were closed to accommodate future landfill needs, corals from the lagoons were salvaged and transplanted to Sisters' Islands where they are now thriving.

Giant clams grown in nurseries for reintroduction

D



Similar to Targets 5 and 11, Singapore has made great efforts to preserve native habitats intact, and to restore connectivity between patches to enhance ecosystem services.

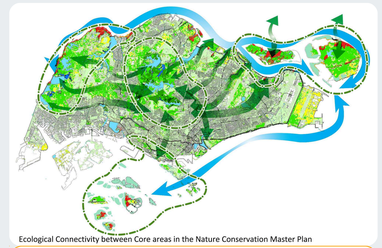
NBSAP Strategy 1 - Safeguard Our Biodiversity: Ongoing reforestation programmes at Nature Reserves not only help to improve their resilience as ecosystems by adding buffer zones to core areas, they also contribute towards sequestration of carbon. Various tree planting programmes outside of the Nature Reserves can also contribute to this target, e.g. in habitat enhancement and restoration efforts in areas such as Pulau Ubin and Tampines Eco Green and also Singapore's streetscape planting, including Nature Ways and Southwest Community Development Council's One Million Tree Planting Programme. Within the built environment, Singapore has been very actively greening the urban infrastructure as part of the City in a Garden vision, which greatly increases the capacity of the urbanised areas to contribute to climate change mitigation.

Greening of Urban Infrastructure

Singapore has had a long history of incorporating greenery into the built environment. In 2013, Singapore celebrated 50 years since the start of efforts to improve the quality of life and make Singapore distinctive and attractive through greenery. Over the years, these efforts have evolved from the original focus of just providing greenery within open areas or parks island-wide to incorporating greenery and nature throughout the built environment of Singapore. The greening of Singapore's urban infrastructure now focusses on natural plantings, such as the Nature Ways and other innovative means of incorporating greenery, such as vertical gardens, skyrise (or rooftop) greenery among others. These actions add an additional dimension of carbon sequestration all throughout Singapore's built environment.

Nature Ways are roadside greenery designed to mimic the natural structure of a forest.

E



Ecological Connectivity between Core areas in the Nature Conservation Master Plan

Singapore's NBSAP is currently undergoing review and national targets are being developed. In addition, NParks' Nature Conservation Master Plan (NCMP) is intended to support the implementation of Singapore's NBSAP.

NBSAP Strategy 3 - Improve Knowledge of Our Biodiversity and the Natural Environment: There is a strong focus on academic research on biodiversity in Singapore, and the study results are then transmitted to the relevant managing authorities for incorporation into their management plans. Biodiversity related information is also collated and managed, and tools are supplied to analyse the data in order to provide timely and relevant information to policy and decision makers. Biodiversity related information is then disseminated using the various initiatives under Strategy 4 - Enhance Education and Public Awareness. Events such as the Festival of Biodiversity are very useful in communicating up to date information on biodiversity to the general public.

NParks' Nature Conservation Master Plan (NCMP)

NParks developed the NCMP in 2015 in order to systematically consolidate, coordinate, strengthen and intensify the biodiversity conservation efforts initiated by our NBSAP, and it comprises 4 thrusts.
(1) Conservation of Key Habitats, which has the following objectives:1. safeguard and strengthen core areas; 2. secure and enhance buffer areas; 3. enhance and manage additional nodes of greenery throughout the nation; 4. develop ecological connections ; and 5. integrate nature with the broader urban landscape.
(2) Habitat Enhancement, Restoration and Species Recovery, which focusses on habitat enhancement and restoration in core areas, buffers, other greenery nodes and ecological connections; and species recovery which focusses on endemic species, conservation status, rediscoveries and reintroductions;
(3) Applied Research in Conservation Biology and Planning, which focusses on monitoring efforts such as comprehensive surveys and long term monitoring of ecosystems and species; ecological research; application of up-to-date tools including GIS, numerical modelling, DNA technology and databases; science-based policy formulation and management planning; and applied research on the management of human-wildlife interactions.
(4) Community Stewardship and Outreach in Nature, which is implemented through the Community in Nature (CIN) initiative. CIN is a national movement to connect and engage different groups in the community to help conserve Singapore's natural heritage. Examples of CIN activities include incorporation of biodiversity into all levels of the education system, citizen science, development of the Singapore Biodiversity Atlas and Greening of schools for Biodiversity.

AICHI BIODIVERSITY TARGETS
STRATEGIC GOALS

A Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society

Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

B Reduce the direct pressures on biodiversity and promote sustainable use

Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

C To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

D Enhance the benefits to all from biodiversity and ecosystem services

Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

E Enhance implementation through participatory planning, knowledge management and capacity building

Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

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Sources:

Singapore's 5th National Report to the CBD

Singapore's National Biodiversity Strategy and Action Plan

NParks' Nature Conservation Master Plan

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