

H U M A N



N A T U R E

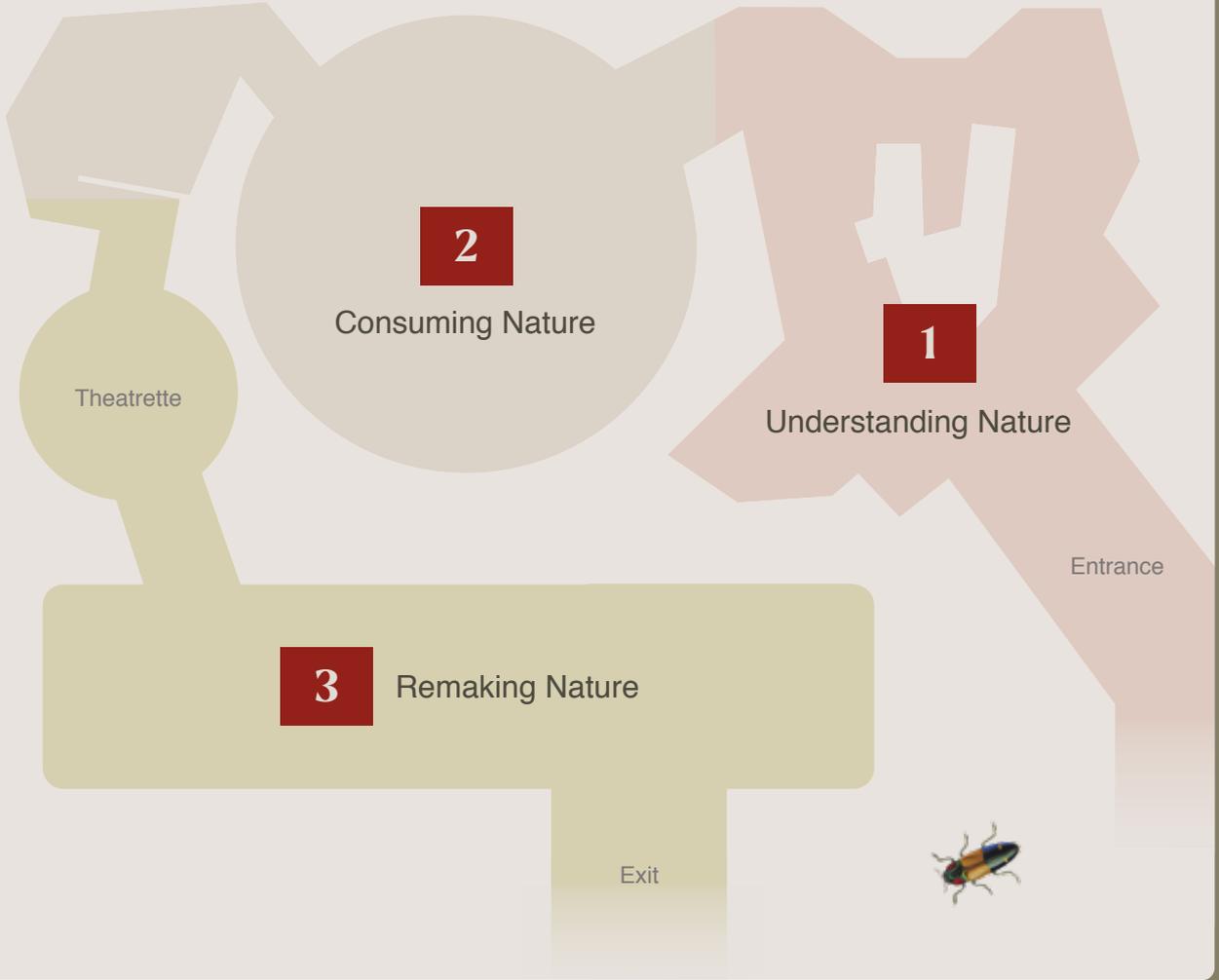
Environmental Histories of Singapore



Exhibition Guide



EXHIBITION LAYOUT PLAN



UNDERSTANDING NATURE

Southeast Asia is one of the most biodiverse areas of the world. In Singapore alone, there are over 40,000 species of plants and animals. The flora and fauna of the region have been studied for centuries, and a great depth and breadth of environmental knowledge has been accumulated across its communities.

From the 17th century, increased trade and European colonisation in the region introduced the study of natural history, defined as the description, naming and classification of living things. These efforts intensified throughout the 18th century, when the British and Dutch East India companies began their commercial and colonial efforts in earnest. Naturalists and explorers poured into the area, eager to study foreign and “exotic” species.

The European study of natural history was pursued in part for scientific interest. On the other hand, a thorough understanding of the environment was considered a key component of colonialism, as it enabled control of merchant economies to be seized. The latter relied heavily on the trade of natural resources such as spices, timber and plantation agriculture.



***MALAY VILLAGE MEDICINE:
PRESCRIPTIONS COLLECTED BY I.H. BURKILL AND MOHAMED HANIFF***

I.H. Burkill (1870–1965), Mohamed Haniff (1872–1930)
The Garden's Bulletin Straits Settlements Vol. VI (April 1930), No. 6–10
Singapore, 1930
Ya Yin Kwan Collection, Gift of Mr. Tan Yeok Seong
Collection of the National Library, Singapore

This publication on Malay medicine is one of the rare publications that credits a Malay naturalist as the author. It contains valuable information about the botanical knowledge of the Malay communities across the peninsula. It also includes a glossary of Malay plant names alongside the scientific names.

The authors note that in adopting the Malay naming convention, many plants were named for their properties and uses instead of their physical characteristics. Hence, this resulted in different looking plants with similar names, a method that contrasted to that of European scientists.

Long-time collaborators, Burkill and Haniff, toured the Malay Peninsula extensively. They consulted bomohs (medical practitioners) and bidans (mid-wives) about local medicines and requested samples of various plants. Once acquired, the botanic samples were deposited in the Singapore Botanic Gardens Herbarium, where their characteristics and uses were recorded.





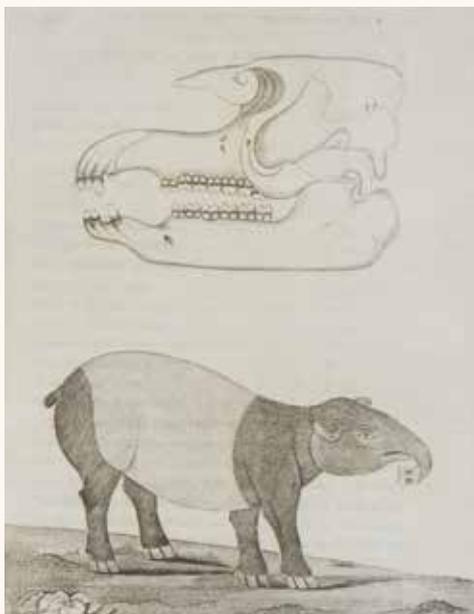
ACCOUNT OF A NEW SPECIES OF TAPIR IN THE PENINSULA OF MALACCA

William Farquhar (1774–1839), A. Seton, Pierre-Medard Diard (1794–1863)

Asiatic Researches, Vol. XIII No. XI (1820/21)

London, 1820

Collection of the National Library, Singapore



Prior to his position as First Resident of Singapore, Farquhar served as Resident and Commandant in Melaka for 15 years. Throughout that time, he was extremely active as a naturalist. He commissioned the capture and collection of plants and animals, and compiled information for publishing.

This politics of publishing in the European scientific community is perfectly encapsulated by Farquhar's attempt to publish his description of the Malayan tapir. Though he wrote his account in 1816, his manuscript remained unseen for almost four years, before finally being published in 1820 in the volume shown here. Meanwhile, Raffles was keen to publish his own account in London. He wrote to his friend Nathaniel Wallich, requesting that Farquhar's paper be withdrawn on account of "inaccuracies". It is not known whether Raffles's request was heeded.

In spite of these efforts, French naturalists Georges Cuvier and Anselme Gaëtan Desmarest read Farquhar's manuscript, and obtained tapir specimens of their own. They then successfully published their own accounts ahead of both Raffles and Farquhar in 1819, and Desmarest had the honour of naming the species *Tapirus indicus*.

ZOOLOGICAL RESEARCHES IN JAVA, AND THE NEIGHBOURING ISLANDS

Thomas Horsfield (1773–1859), Charles Joseph Hullmandel (1789–1850)

London, 1824

Collection of the National Library, Singapore



This work by American naturalist Thomas Horsfield documents part of the natural history collection he amassed when he was in Java between 1801 and 1819.

Horsfield began residing in Java when he was employed as a surgeon by the Dutch colonial company in Batavia (Jakarta). It was during this time that he began conducting his natural history research in the region. When the British army invaded and wrested control of Java from the Dutch in 1811, Horsfield befriended the then newly minted Lieutenant-Governor of Java, Stamford Raffles, who commissioned him to collect specimens.

In his book, Horsfield describes over 70 different mammals and birds, some which he identified and classified for the first time. As a result, several species of the region were named after him, such as the Javanese Flying Squirrel (*Iomys horsfieldii*) and Horsfield's Fruit Bat (*Cynoterus horsfieldi*).





GLEANINGS OF NATURAL HISTORY, EXHIBITING FIGURES OF QUADRUPEDS, BIRDS, INSECTS, PLANTS & C. VOLUME 1

George Edwards (1694–1773)

London, 1758

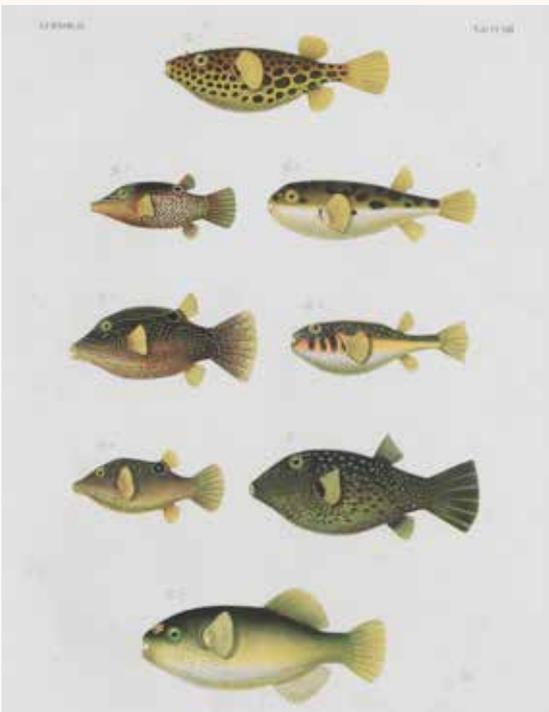
Collection of the National Library, Singapore

This is the earliest work of natural history in the exhibition. It is also the only one that pre-dates the Linnaean system of classification, upon which all modern scientific classifications are based.

Written by English naturalist George Edwards, the three volumes contain hundreds of natural history illustrations, prepared and hand-coloured by the author.

The descriptions of various plants and animals from around the world were based on specimens, both dead and alive, that Edwards observed in museums as well as collections brought to England by sailors and other naturalists.

This page shows Edwards' illustration of an orangutan, which he refers to as the "Man of the Woods". His description was based on a specimen residing in the British Museum, which he compares to accounts of similar animals by travellers and naturalists. With only descriptions and illustrations to go by, Edwards could only speculate on the identification of the species, which he believed to originate from either India or Africa.



ATLAS ICHTHYOLOGIQUE DES INDES ORIENTALES NÉÉRLANDAISES: PUBLIÉ SOUS LES AUSPICES DU GOUVERNEMENT COLONIAL NÉÉRLANDAIS

Pieter Bleeker (1819–1878)

Amsterdam, 1862–1878

Donated by the Marine Fisheries Research Department
Collection of the National Library, Singapore

The tropical waters of the region contain the richest marine biodiversity in the world, with new species still being discovered to this day. This nine-volume series work is one of the most comprehensive and sought-after publications of fish in the seas of the Malay Archipelago, containing 1,500 hand-coloured illustrations.

It was published by Pieter Bleeker, an ichthyologist and military physician under the employ of the Dutch East India Company. While Bleeker was stationed in Indonesia, he acquired specimens and information from local fishermen, over 12,000 of which now reside in the Natural History Museum in Leiden, Netherlands.



CONSUMING NATURE

The spirit of scientific exploration that characterised the European colonial endeavor from the 17th to 19th centuries was accompanied by ecological destruction in their colonies. By the 19th century, the imperial economic ambitions of European trading companies like the British East India Company (EIC) had spurred a complex network of botanical exploration and knowledge gathering in Southeast Asia, with the goal of subduing and harnessing the natural world for commercial gain.

Following the establishment of an EIC trading post in Singapore in 1819, vast swathes of primary forest were cleared to cultivate cash crops and to build town areas and roads leading into the interior. In the 1830s, trade tariffs on gambier were lifted. This enabled increased access to Britain and the global market, causing the planting of gambier and pepper for export to accelerate. Nature in Singapore became an object of consumption as its resources were harvested to produce agricultural commodities for the global market.



PLAN SHOWING ENCROACHMENTS ON CROWN LAND IN THE DISTRICT OF WHA HEN KANG

Survey Office, Singapore, Straits Settlements (S.S),
16 May 1880

Collection of Singapore Land Authority, courtesy of
National Archives of Singapore

This survey plan maps out the gambier and pepper plantations, jungle used for timber cutting, and abandoned lalang grass areas in Wha Hen Kang, historically located at the southernmost tributary of Kranji River. The numbers denote plots of land near Jurong Road, which were leased out by colonial authorities to Chinese planters, and their nature, duration and sizes of their cultivated areas. The largest plantation plot shown here was leased by planters Oh Ah Poke and Yheon Ah Ngoh for 10 years.

Land “under cultivation without authority”, marked by faint blue boundary lines, were occupied by squatters (temporary settlers). The Chinese practised shifting cultivation, involving the clearing of virgin primary forest for cultivating crops. When the soil became exhausted of nutrients, and nearby timber and firewood supplies became scarce, the squatters abandoned their plantations and moved to new virgin land. Former plantation land was soon infested by the invasive lalang grass (*Impertina cylindrica*).



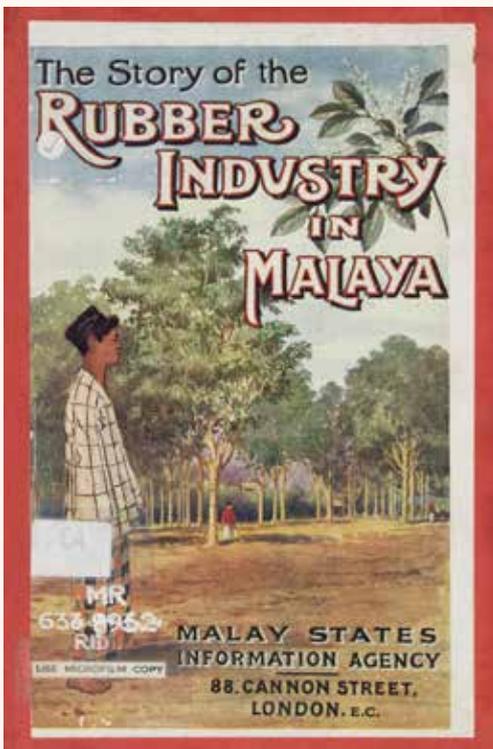
THE STORY OF THE RUBBER INDUSTRY

Henry Nicholas Ridley (1855–1956)
London, c. 20th century
Collection of the National Library, Singapore

The commercial cultivation of rubber in Malaya was pioneered by Henry Ridley (1855–1956) at the Singapore Botanic Gardens, where he served as its first director. Ridley refined the herringbone method of tapping the crop. Protected from damage in this way, the rubber trees had a latex-producing lifespan of more than 20 years. This made rubber an economically viable crop for mass cultivation.

This pamphlet was created by Ridley to encourage planters to take up rubber planting. He outlines best tapping practices and preparation methods, and rubber's economic potential and output in Malaya.

Ridley famously filled his jacket pockets with fresh rubber seeds and stuffed them into the pockets of uninterested planters to persuade them to plant rubber. These actions later earned him the nicknames "Mad Ridley" and "Rubber Ridley".

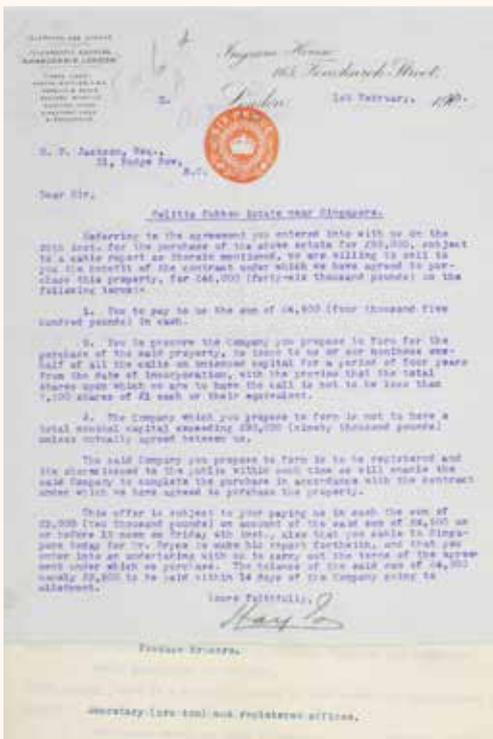


SELETAR RUBBER ESTATE PURCHASE REPORT

Seletar Rubber Estates Limited
Singapore, 1 February 1910
Collection of the National Library, Singapore

The commercial potential of rubber attracted merchants to participate in the mass cultivation of the crop. They included Tan Chay Yan (陈齐贤), who began Malaya's first rubber plantation in 1896, and Tan Kah Kee (陈嘉庚), who started interplanting rubber with pineapple at his Seletar estate in 1906.

In 1910, Tan Kah Kee sold his rubber estate in Sembawang to London-based investors, who subsequently founded the Seletar Rubber Estates Limited. This purchase report details Tan's 898-acre (approximately 3.6 square kilometres) plantation land area, its 235,000 existing para rubber trees, as well as calculations on its anticipated rubber output, cost and profit from 1910 to 1916.





MAP OF THE ISLAND OF SINGAPORE AND ITS DEPENDENCIES

Singapore, 1898
Collection of the National Library, Singapore

This map shows the forest reserves (marked in green) that existed on the island at the turn of the 20th century. By the late 1870s, the government of the Straits Settlements had grown increasingly concerned by the colonies' rapidly diminishing timber and water supplies. In 1881, Nathaniel Cantley (1847–1888), Superintendent of Singapore Botanic Gardens, was tasked with reinvigorating a natural landscape that had been devastated by plantation agriculture and timber harvesting. To preserve Singapore's primeval forests, he proposed that reserves be formed in eight areas containing the remaining primary forests. These eight areas later became Singapore's first forest reserves.

By 1886, the number of designated reserves had grown to fourteen. After Cantley's passing in 1887, Henry Ridley, the Gardens' first director, led the Forest Department and continued forest maintenance and recovery work.

The Forest Department employed forest watchmen to patrol the reserves, fight forest fires and prevent illegal logging. Meanwhile, forest workers collected fallen fruits and seeds, cultivated them in nurseries at the Singapore Botanic Gardens and replanted them in reserves across the island.



MALAYAN TIGER *PANTHERA TIGRIS JACKSONI*

On loan from the Zoological Reference Collection,
Lee Kong Chian Natural History Museum

Malayan tigers were believed to have swum across the straits from the Malay Peninsula to Singapore by way of the intermediate islands of Pulau Tekong and Pulau Ubin in search of food and breeding grounds. They roamed at forest edges, which provided food sources such as wild boar and deer.

As humans continued to encroach upon Singapore's forests, tigers were unable to obtain enough food from the scarce amounts of remaining natural habitat. They later began to prey on domestic livestock and human beings. By the mid-19th century, Singapore had developed a reputation for having hordes of man-eating tigers.



REMAKING NATURE

In 1967, Singapore's first Prime Minister Lee Kuan Yew implemented the "Garden City" vision, with the aims of improving the liveability of the rapidly urbanising city-state and attracting tourism and foreign investment. Tree planting programmes, newly created parks and dedicated green spaces subsequently introduced greenery into urbanised areas. These greening efforts were accompanied by an interest in the protection of local biodiversity. To this end, the Nature Reserves Board (NRB) was formed in the 1970s to manage and safeguard existing nature reserves.

The twin demands of developing essential urban infrastructure like housing and transportation, and of the conservation of natural areas, proved to be a difficult balancing act. This is a tension experienced by many countries but one that was especially acute for land-scarce Singapore. As the aspirations and needs of each new generation of Singaporeans change, Singapore's land use policies have had to evolve accordingly. While population needs like public housing continue to be in high demand, natural areas have also become essential for public recreation. Today, this balancing of the needs of development and nature conservation continues.



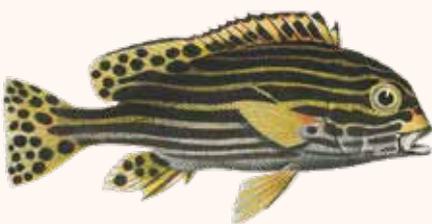
A GUIDE TO TREE PLANTING

Singapore Botanic Gardens
Singapore, 1963
Collection of the National Library, Singapore

Singapore's first Prime Minister Lee Kuan Yew launched post-colonial Singapore's first Tree Planting Campaign in 1963 with an emphasis on providing shade and greenery to improve the quality of the islands' roads and public spaces. This would later culminate in a wider vision in 1967 known as the "Garden City" campaign. An important part of this campaign was public education, to garner wide-spread public support for the greening of Singapore.

This guide to tree planting was published by the Singapore Botanic Gardens in all four national languages in 1963 as part of an effort to educate the public on the importance of growing trees. It stressed the importance of trees in an urban environment and encouraged residents to plant small flowering trees such as Acacias and Casuarinas in their gardens and residential areas.

Trees were available for sale at the Botanic Gardens Plant Nursery, and the public were encouraged to seek assistance from the Director of the Gardens for their own tree planting efforts.





**THE MALAYAN ORCHID REVIEW
MALAYAN ORCHID SOCIETY**

Singapore, 1934
Collection of the National Library, Singapore

Erich Richard Holttum began his career as a botanist in Singapore as Assistant Director of the then Gardens Department of the Straits Settlements from 1925-1949. Struck by the continued successful cultivation of the orchid Vanda Miss Joaquim stemming from 1893, he dedicated himself to orchid hybridisation and cultivation. In 1928, he successfully introduced a new method of orchid germination from Europe, which he experimented on in the Singapore Botanic Gardens and kick-started the orchid cultivation programme in Singapore.

He formed the Malayan Orchid Society with Jon Laycock and Emil Galistan in 1928 to whose aim was to promote the orchid industry in the region, with close ties to the Botanic Gardens orchid cultivation lab. The society published the Malayan Orchid Review, showcasing and discussing new orchid hybrids and also held flower shows and competition. These efforts spawned a flourishing industry in Singapore and by 1992, the orchid industry was contributing \$3 million to Singapore's economy annually. Singapore continues to be an important centre for orchid hybrid breeding till today.



**FLOWERS OF SINGAPORE:
SPECIAL STAMP ISSUE 10TH TREE PLANTING DAY**

Sylvia S.H. Tan, Chua Ban Hor
Singapore, 1980
PO1058/98
Collection of the National Archives of Singapore

This poster features a commemorative stamp collection issued in 1980 to celebrate the tenth anniversary of Tree Planting Day. The stamps feature ornamental flowers commonly seen on roadsides and in parks and gardens including the Ixora, Allamanda, Sky vine, and Bougainvillea.

While the poster reads 'Flowers of Singapore', most of these flowers are not native to the island. Allamanda is an introduced species native to Brazil, the Sky vine is native to India, and the Bougainvillea is native to South America. However, all these plants have become a hallmark of Singapore's greenery and are signature plants in our landscape.

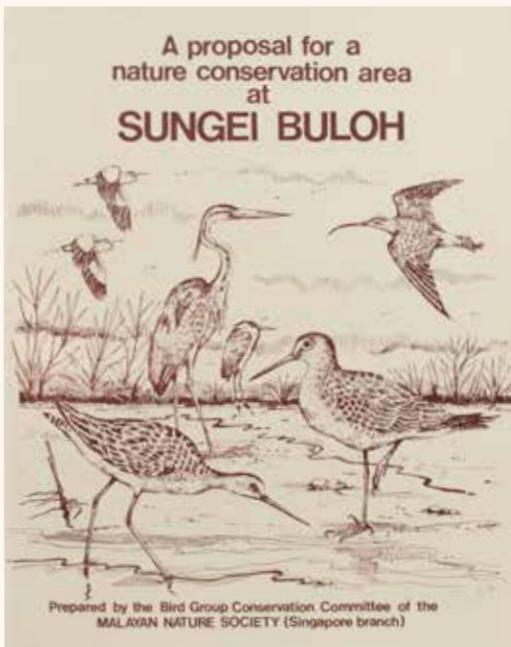




A SURVEY OF NATURE CONSERVATION ON SINGAPORE ISLAND

Humphrey Morrison Burkill (1914-2006)
 Singapore, 1959
 Collection of the National Library, Singapore

This survey of Singapore's five nature reserves – Bukit Timah, Pandan, Kranji, Labrador and the Central Water Catchment Nature Reserve – was conducted by Humphrey Burkill, who served as director of the Singapore Botanic Gardens from 1957 to 1969. The passing of the Nature Reserves Ordinance and Nature Reserves Act of 1951 extended legal protection to these nature reserves, and mandated that they were to be managed with the goal of protecting indigenous flora and fauna. These developments laid the foundations for nature conservation efforts in post-independence Singapore.



A PROPOSAL FOR A NATURE CONSERVATION AREA AT SUNGEI BULOH

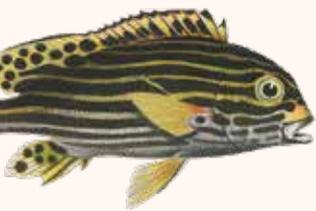
Richard Hale, Subaraj Rajathurai, Rexon Ngim, and Ho Hua Chew, in collaboration with Clive Briffett and Christopher Hails
 Singapore, 1987
 Collection of the National Library, Singapore

This conservation proposal for the Sungei Buloh Wetlands was prepared by the Bird Group Conservation Committee of the Malayan Nature Society (Singapore branch). It is the first in a series of proposals that preceded the Master Plan for the Conservation of Nature in Singapore.

In the proposal, the writers make the case for Sungei Buloh's cultural and natural history value, describing it as Singapore's "last sanctuary" for its 126 bird species, many of which are migratory birds from northern Asia. The group makes various suggestions to manage the site as a bird sanctuary and hub for environmental education, including a visitor's centre and activities like guided walks and farming tours.

In 1989, the government officially committed to Sungei Buloh's conservation and designated it as a nature park. This was a historical milestone for nature conservation, as it was the first-ever time land was set aside for conservation in post-independence Singapore.





THANK YOU FOR VISITING THE EXHIBITION.



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the exhibition



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