

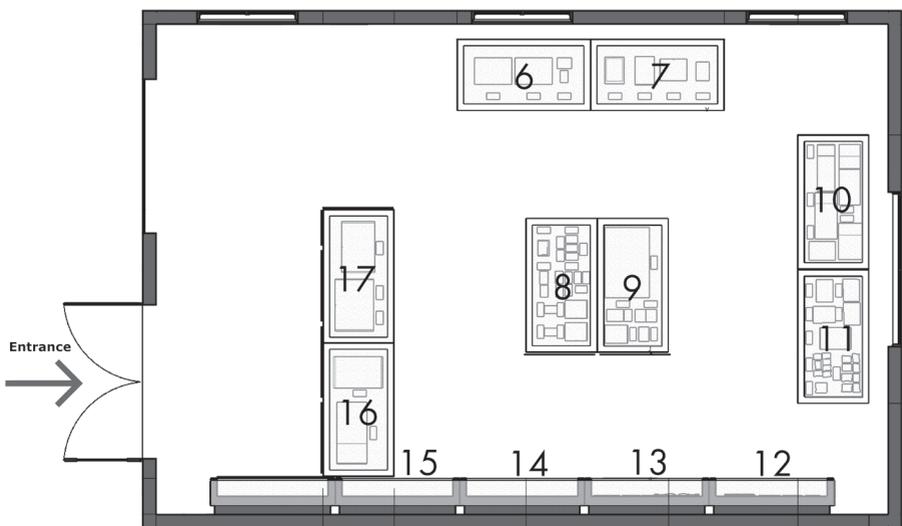
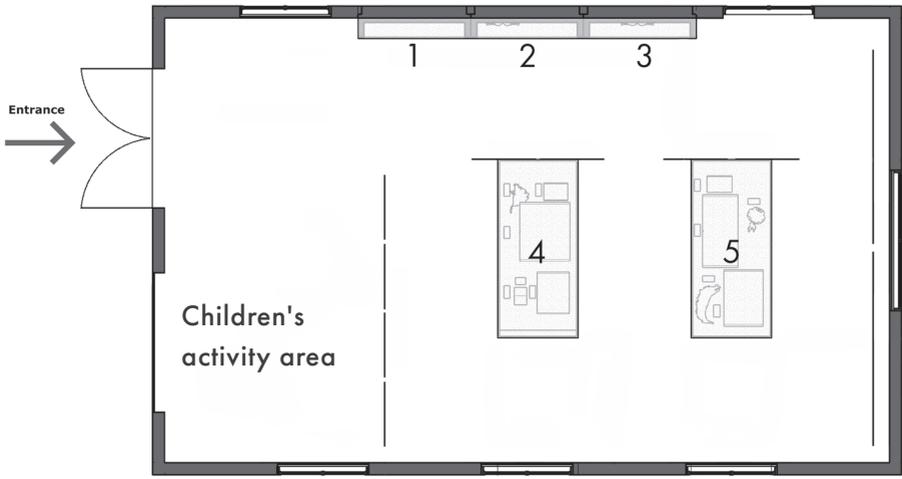
Tropical Forest Sceneries

Singapore
& Beyond

BOTANICAL ART GALLERY

15 March – 17 September 2023





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Introduction

This exhibition is a visual journey through the changing forest sceneries in Singapore and its vicinity.

Before commercial agriculture and urbanisation, Singapore and its surroundings were mostly covered by lush forests, including freshwater swamps, coastal vegetation, and lowland mixed dipterocarp forests. With the advent of global trade and population expansion, large tracts of forests were cleared to produce cash crops for export.

Artists and naturalists alike felt a pressing need to record disappearing forests. While artists illustrated stunning forest sceneries, naturalists concentrated their efforts on collecting and studying specimens.

The colonial government and civil society were concerned that primary forests would be lost in perpetuity. They pushed for the preservation of extant forests by establishing nature reserves and starting tree planting campaigns. After Singapore gained self-governance in 1959, the government intensified greening efforts which culminated in the Tree Planting Campaign in 1963. New forest reserves, such as the Sungei Buloh Wetland Reserve, continued to be identified and gazetted for protection. Today, this commitment to greening Singapore continues unabated through the National Parks Board's vision to create a City in Nature.

The line drawings, watercolour paintings, lithographs, photographs, maps, books and carpological displays in this exhibition will take you back in time to scenes of verdant abundance and grandeur, of deforestation and devastation, and finally, of reforestation and restoration.



Scene 1 Lush Forests

Before the 1878 introduction of silver gelatin plates in photography, tropical forest sceneries were mostly captured in paintings and sketches. One of the artists who illustrated these sceneries was Austrian artist-diplomat Eugen von Ransonnet-Villez. During his seven-week stay in 1869, Ransonnet explored several parts of rural Singapore and neighbouring Johor. He drew stunning sceneries of freshwater swamp, lowland dipterocarp forest, and coastal vegetation on stone. These illustrations were published in his travelogue *Skizzen aus Singapur und Djohor* [Sketches from Singapore and Johor], and they provide us with a rare glimpse into the natural landscapes and ecology of Singapore and Johor before deforestation.

Left: **Near a Tiger Pit (Bukit Timah)**

Eugen von Ransonnet-Villez

1876, reproduction, hand-coloured by Teo Nam Siang, 2023

In *Skizzen aus Singapur und Djohor* [Sketches from Singapore and Johor], plate VIII

Collection of National Library, Singapore [Accession no.: B03013662].

From a rotten tree stump near two tiger traps at Bukit Timah, Ransonnet skilfully depicted a scene of a lowland mixed dipterocarp primary forest. Plants from the Dipterocarpaceae family, with their distinctive winged fruit, form the largest proportion of trees here. This is the most common type of forest in the region, and these forests are very rich in biodiversity and home to many narrowly distributed plant species. This illustration immerses viewers in the experience of walking through the Bukit Timah rainforest. Plants growing in the understory and on the forest floor, such as the aroids with elephant-ear-shaped leaves in the left foreground (likely *Alocasia longiloba*), can be seen at close distance. Just above the aroids is a cluster of fan palms (*Licuala ferruginea*) shielding a tiger trap. To Ransonnet, dainty climbers from the Piperaceae family appeared like delicate embroideries of green velvet on the red, scaly bark of the buttressed-trunk tree.



E.v. Ransonnet del. et lith.

Weg durch den S
Path across the swamp.



Druck v. Haupt & Geiger in Wien.

umpf (Tschängi)

Senfier à fravers le marais.

Previous page: **Path Across the Swamp (Changi)**

Eugen von Ransonnet-Villez

1876, coloured lithograph

In *Skizzen aus Singapur und Djohor* [Sketches from Singapore and Johor], plate XI

While sitting on a fallen tree trunk on his second Changi visit in March 1869, Ransonnet drew this scene of a freshwater swamp forest. Freshwater swamps are normally found further inland. Their characteristic vegetation sets them apart from brackish or saltwater mangrove swamps that line seacoasts and river mouths.

At the centre of this illustration is the iconic sealing-wax palm (*Cyrtostachys renda*) with its vermilion leaf sheaths and ribs. Ransonnet was impressed by the colossal pandans (Pandanaceae) in front of the palm, whose leaves he measured to be 20 feet long (6.1 m). A man wearing a sarong crosses the swamp on a fallen tree trunk with large pandan leaves on his shoulders. These leaves were most likely used for making mats. To the right of the pandan stands a thorny asam paya or kelubi palm (*Eleiodoxa conferta*), whose intensely sour fruits are used as a substitute for tamarind in cooking. It is surrounded by young ferns, likely *Stenochlaena palustris*, an edible fern also used in traditional medicine. In the left foreground, the plant with three-lobed leaves is a species of *Macaranga*, a genus which includes many species known for recolonising disturbed ecosystems.



View in Changhi [Changi] (Singapore)

Eugen von Ransonnet-Villez

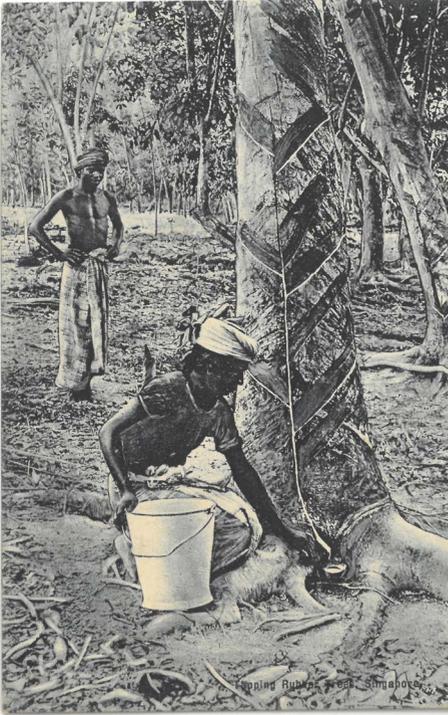
1876, reproduction, hand-coloured by Teo Nam Siang, 2023

In *Skizzen aus Singapur und Djohor* (Sketches from Singapore and Johor), plate II

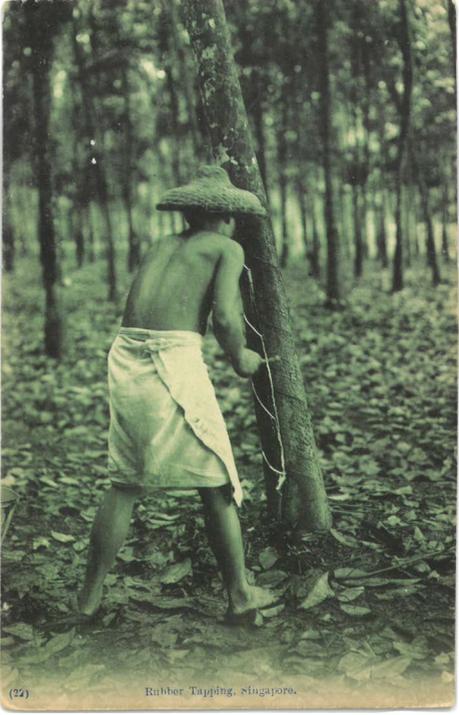
© The Board of Trustees of the Royal Botanic Gardens, Kew.

Faced with strong north-west wind in the Johor Strait, Ransonnet and his companions ended up at a Changi promontory after two hours of rowing. It was from this excellent spot that he drew this scene of coastal forest, where the sea, Pulau Ubin and Johor were visible in the background between mighty trunks of the thinned jungle. In the foreground stands a tall tree with tiered branching. It is possibly *Terminalia catappa* or sea almond, one of the most common native coastal trees. Epiphytes can also be seen hanging from the two trees at the right corner of this illustration.

Coastal vegetation nearer to the shore tends to be lower, growing taller further inland. The presence of giant trees in this drawing suggests that the illustrated coastal forest lies further inland. Coastal vegetation is usually hardier and can withstand higher temperatures than that of many inland habitats.



Spring Rubber Tree, Singapore.



(22)

Rubber Tapping, Singapore.



2334. Rubber. Bringing in the Latex.

Scene 2 Deforestation

Extensive deforestation in Singapore and the region began in the 1740s, before colonial rule, with the establishment of pepper and gambier plantations on the Riau Islands in present-day Indonesia. The Riau Islands were the centre of the Kingdom of Johor in the 18th and early 19th century, which included Singapore and the current Malaysian state of Johor. After exhausting the ground in the Riau Islands in the early 19th century, planters shifted their plantations to Singapore and later, Johor. Besides gambier and pepper, other popular cash crops included tapioca, pineapple, coconut and later rubber and oil palm.

Left: *Hevea brasiliensis* (Willd. ex A.Juss.) Müll.Arg. (Rubber) Plantation, Sap-tapping, and Processing

G.R. Lambert & Co., The Continental Stamp Company, and others

1900s to 1930s, postcards

Donated by Mr Lim Kheng Chye

From the late 1890s to the late 1920s, rubber plantations greatly expanded in Singapore and Peninsular Malaysia. This came after Henry Nicholas Ridley, director of the Singapore Botanic Gardens between 1888 and 1912, made rubber commercially viable. Global demand for rubber, led by the automobile industry, increased exponentially. Ridley's team discovered that tapping before dawn resulted in the highest yield. They also popularized the herring-bone sap-tapping method, which prevented permanent damage to the tree, as seen in the top row of postcards. Rubber latex was used not only in the production of tyres, but also in a vast range of products such as floor tiles and paper like the one used for the *British Empire Exhibition: Malayan Series* pamphlets displayed in this exhibition.



AFRICAN OIL PALM (*Elaeis guineensis*).



ARTIFICIAL POLLINATION OF OIL PALM.

Above: **African Oil Palm**
(*Elaeis guineensis*)
Artificial Pollination of Oil Palm

1923, photographs

In *British Empire Exhibition: Malayan Series*
 No. VI Oils & Fats (printed on rubber latex paper)

Right: ***Elaeis guineensis***
with fern *Davallia solida*

G.R. Lambert & Co.

1910s, postcard

Donated by Mr Lim Kheng Chye



From the early 1920s, *Elaeis guineensis* or African oil palm gained increasing significance as a cash crop in this region. Although both male and female inflorescences are produced on the same palm, pollination does not always occur naturally. They were therefore artificially pollinated as depicted in the right photograph of the *British Empire Exhibition* pamphlet (above). The pamphlet was printed on rubber latex paper. It was one of the many products, ranging from car tyres to floor tiles, made from rubber latex during the time. The postcard (right) shows an oil palm specimen beside the Plant House in the Singapore Botanic Gardens.



Malay Railway Construction

– **A Big Cutting** (above)

– **A Long Bank** (right)

Frank Athelstane Swettenham

1907, photographs

In *British Malaya: An Account of the Origin and Progress of British Influence in Malaya*



With the expansion of commercial agriculture, mining activities and urbanisation, modern transportation systems were needed to move large quantities of cash crops, raw materials, and people from hinterlands to ports and urban centres efficiently. Rail freight was and remains one of the most important modes of cargo transportation. Therefore, the construction of a railway system became a priority. These photographs show a forest being cleared for railway construction in British Malaya, where the first railway section linking the mining centre of Taiping with the coastal town of Kuala Sepetang was completed in 1884.



Scene 3 Naturalists in Action

Sensing the rapid loss of native species arising from deforestation, naturalists felt the urgency to collect and study as many specimens as possible. Botanical collectors, such as Edred John Henry Corner and Cedric Errol Carr, brought back with them not just specimens, but also images of forest sceneries and the collection process. Photographs documented how collectors worked in a team, assisted by porters and even monkeys.

Left: **Cedric Errol Carr in the Field**

Cedric Errol Carr

Edred John Henry Corner

Late 1920s-1930s, photographs

Cedric Errol Carr was a rubber planter, whose interest in orchids, turned him into an orchidologist. Born in New Zealand in 1892, Carr came from England to then British Malaya. For most of the next 18 years, he worked on various Malayan rubber estates. It was from one of these estates at Tembeling, Pahang, surrounded by dense forests, that Carr began serious study of tropical species, especially orchids.

The prevalence of photography in the 20th century enabled the botanical collection process and plant specimens to be easily recorded in the field. This set of photographs was taken during Carr's fieldtrips to Sungai Sedili, Johor, to Mount Kinabalu in Sabah and to Papua New Guinea, where he died of Blackwater Fever in 1936. Carr found that visiting newly deforested areas was most efficient for gathering a representative collection. In the field, he made detailed notes and drawings on the colour, structure and patterns of flowers, and preserved them in spirit to keep their three-dimensional structure. Furthermore, Carr set up an orchid garden to cultivate sterile plants he collected to observe flowering and pollination. Botanical collectors usually work in a team, assisted by local collectors, porters and assistants including Carr's own Tamil servant, Mayandy. After Carr's death, Mayandy played a pivotal role in bringing his New Guinea specimens and notes to Singapore.



Edred John Henry Corner and his Botanical Monkeys

Edred John Henry Corner

Late 1930s, photographs

Donated by John Kay Corner

Edred John Henry Corner, a botanist at the Singapore Botanic Gardens who studied trees and fungi, was well known for employing berok monkeys (*Macaca nemestrina*) to assist him in botanical collecting. The general practice to collect specimens from trees during Corner's time was to cut them down. While enlisting monkeys in botanical collecting is no longer an acceptable practice, the monkeys enabled Corner to collect parts of tall trees, climbers, and epiphytes without felling trees. Corner had eight botanical monkeys over the period from 1937 to 1941. When not out in the field with Corner, they were kept in the back garden of his residence (presently E J H Corner House) within the Singapore Botanic Gardens. Corner would train the monkeys in the Gardens' rainforest and in Bukit Timah Nature Reserve. Instructions were usually given to the monkeys either in Malay or by tugging the cord attached to a collar around their neck as they moved from tree to tree. Not all were proficient at tree climbing. One of them, Che Minah, though not adept at tree-climbing, was good at collecting fungi from the ground. At the end of the day, Corner would give the monkeys lemonade which they were very contented to have.



***Shorea lepidota* (Korth.) Blume, on the Road to Mawai, Johor**

Edred John Henry Corner

1932, photograph

Donated by John Kay Corner

When Corner first began making trips to Mawai in Johor around 1930, primary forests were being cleared to make way for roads. Corner took the opportunity to collect specimens of trees, climbers and epiphytes as they were being felled. Besides specimens, Corner also took many photographs capturing scenes of forest destruction. This photograph shows a road cutting through a recently felled primary forest with a lone tree at its side. The plant is from the Dipterocarpaceae family, whose species make up the most common trees in lowland forests of this region.

Riverine Forest

Edred John Henry Corner

1931–1932, photograph

Donated by John Kay Corner

During his fieldtrips in Peninsular Malaysia and Singapore, mostly to study freshwater swamp forests and trees, Corner photographed numerous breathtaking forest sceneries with his camera. Sadly, a good part of the pristine grandeur has since been destroyed.

Photographs like the one here were intended to support Corner's study of riverine vegetation. In *Wayside Trees of Malaya* and *The Freshwater Swamp-forest of South Johore and Singapore*, Corner classified different sections of a river by the vegetation that grew along its banks and their soil conditions. This photograph shows a rocky stream fringed by vegetation dominated by *Saraca* trees, a genus of flowering plants from the legume family (Fabaceae). Corner called this characteristic plant community type *Saraca-streams*. While some of these photographs were published in *Wayside Trees of Malaya* and *The Freshwater Swamp-forest of South Johore and Singapore*, many remained unpublished and are publicly shown for the first time in this exhibition.

Sungai Sedili Besar, Johor, between Bukit Perah and Bukit Tiga

Edred John Henry Corner

1932, photograph

Donated by John Kay Corner

Between 1929 and 1941, as Corner travelled upstream along the Sedili Besar river in southern Johor, he noticed the regular change in vegetation along its banks. This led him to focus his study on the diversity of swamp vegetation communities, the findings of which were published more than four decades later in *The Freshwater Swamp-forest of South Johore and Singapore*.

Corner classified different river sections into belts or strips of vegetation, based on the predominant species found there. The types of vegetation were determined mostly by the salinity, sedimentation, light levels, tides, and course of the river. Decades later, after having visited the Amazon from Belém-do-Para and Macapá to Iquitos, Corner found that the Amazon was no match for Sedili in terms of species variety and grandeur of forests, despite being much larger.





**Sungai Dohol near Jalan Jemaluang, off Sungai Sedili Besar, Johor,
with *Tristaniopsis* sp. on the Left**

Edred John Henry Corner

1932, photograph

Donated by John Kay Corner

Published in 1978 in *The Freshwater Swamp-forest of South Johore and Singapore*, this photograph depicts Sungai Dohol, a tributary of Sungai Sedili Besar in Johor. The overarching tree on the left is a species of *Tristaniopsis*, probably *Tristaniopsis whiteana*, a common light-loving riverside tree with a characteristic bark peeling in scroll-like strips.

This vegetation community, dominated by *Tristaniopsis whiteana* (pelawan), occurred over large stretches of the Sedili Besar river and its tributaries, especially on raised riverbanks in the freshwater tidal zone. Corner described it as *Tristania-banks*, named after *Tristania sumatrana* (a synonym of *Tristaniopsis whiteana*).

Scene 4

Nature Conservation

Extensive deforestation from commercial agriculture and urbanisation increasingly caused concern in Singapore from the second half of the 19th century. As a result, forest reserves were established to protect significant patches of extant vegetation in 1884. Alongside the Singapore Botanic Gardens' rainforest, parts of these reserves form the only remaining primary forests in Singapore today. Furthermore, immense effort was put into planting trees along roadsides and in parks, especially during the post-war years. The mission to create a City in Nature continues today with the goal of planting another one million trees within ten years by 2030.

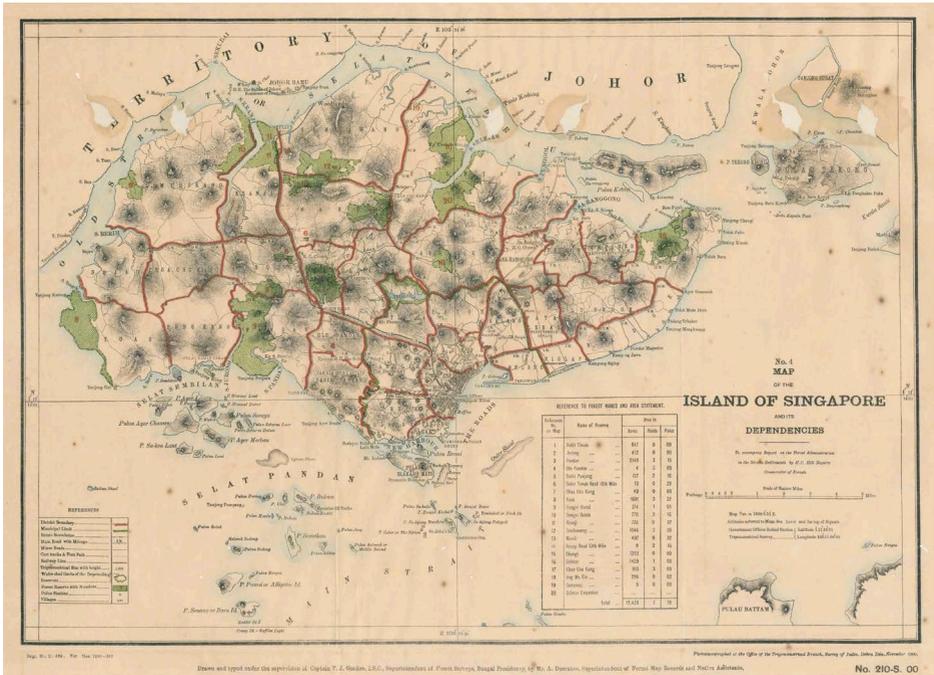
Next page: **Relative Heights and Shapes of Trees**

Juraimi bin Samsuri

1950s-1960s, line drawings

This set of drawings compares the heights and shapes of native and non-native trees. Although it was never published, it was probably meant to be part of the 1963 *A Guide to Tree Planting* issued by the Gardens' director, Humphrey Morrison Burkill. The list of trees recommended for planting in the guide corresponds mostly to those depicted in this set of illustrations. The guide served as a manual for tree planting in private gardens, open spaces, parks and along roadsides and included important information such as a plant's place of origin, maximum height, floral characters and other descriptions. The Gardens disseminated not just information on tree planting, but also sold live plants to the public at its Plant Nursery.





Map of the Island of Singapore and its Dependencies

Alexandre Descubes

1900, map

In *Report on the Present System of Forest Conservancy in the Straits Settlements*, 1900

This map indicates in green the forest reserves of Singapore in 1900, with the size of each reserve included in a table. Forest reserves were established based on the 1882 recommendations of Nathaniel Cantley, Superintendent of the Singapore Botanic Gardens. Besides patches of primary forest, the reserves also encompassed wastelands and forest clearings. They were periodically planted with tree saplings of economic value that had been nurtured at the Singapore Botanic Gardens. The number of reserves shown on this map is more than what Cantley suggested, as more were added after the Forest Department was formed.

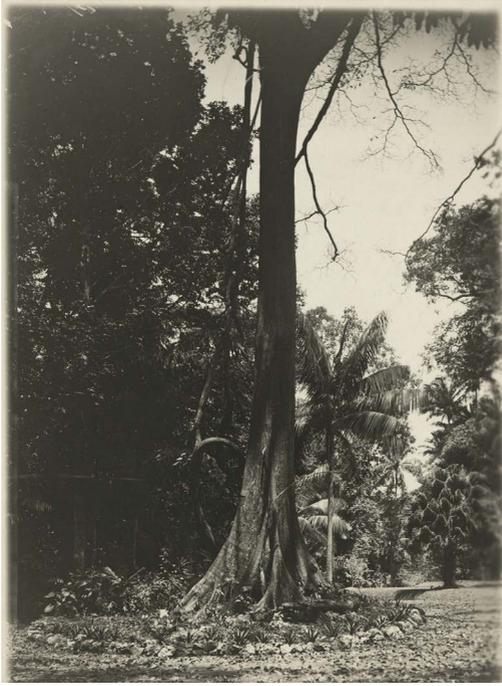
When Cantley proposed the formation of forest reserves, the main motivation was not to protect Singapore's biodiversity and the natural habitats of its flora and fauna, which is the case today. It was to ensure a sustainable supply of timber, prevent soil erosion, and to protect streams and other water sources.



Morning Sunbeams, Lower Ring Road

November 1961, photograph

This photograph captures the morning scenery of Lower Ring Road with the Gardens' rainforest on the left. The tree second from right, is *Heritiera elata* or mengkulang, a heritage tree with a characteristic fluted trunk, that is still standing today. The tree is known for its large buttresses with grey flaky bark and pink flowers.



Above: ***Terminalia subspathulata* King**

COMBRETACEAE

September 1925, photograph

Right: ***Terminalia subspathulata* King**

COMBRETACEAE

Annotations: *Terminalia subspathulata* (Jelawai Jaha)

Waiwai Hove

2014, watercolour

A majestic heritage tree is guarding the entrance of the Gardens' rainforest along Lower Ring Road and Maranta Avenue. The splendidly buttress-trunked *Terminalia subspathulata* specimen predates the founding of the Gardens and is estimated to be more than 200 years old. The Gardens' rainforest, being one of the very few primary forests left in Singapore, plays an important role in conserving the natural habitats of many plants and animals, including numerous endangered species. Besides *Terminalia subspathulata*, the rainforest is also home to the largest woodpecker in the world, *Mulleripicus pulverulentus* or great slaty woodpecker, which is considered critically endangered in Singapore.



Please return any unwanted booklet to the counter.

The Botanical Art Gallery is located within the Gallop Extension,
Singapore Botanic Gardens

Opens daily 9 am – 6 pm*

*closed every last Thursday of the month

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The exhibition "Tropical Forest Sceneries: Singapore & Beyond" and this booklet are curated by Martina Yeo and Michele Rodda.

For information about NParks' conservation efforts and how you can get involved, please visit www.nparks.gov.sg.

To learn more about our City in Nature, scan the QR code below or visit www.nparks.gov.sg/CityInNature.



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