

NEWSLETTER

SINGAPORE and MALAYSIA



Stop at Frankfurt



*Jewel Changi,
Singapore
airport*



An 11-hour flight from Frankfurt is all it takes to reach this city of futuristic architecture, straight out of a video game, the city-state of Singapore...

The airport, grandiose and verdurous, gives us our first glimpse of the jungle-city we're about to enter.

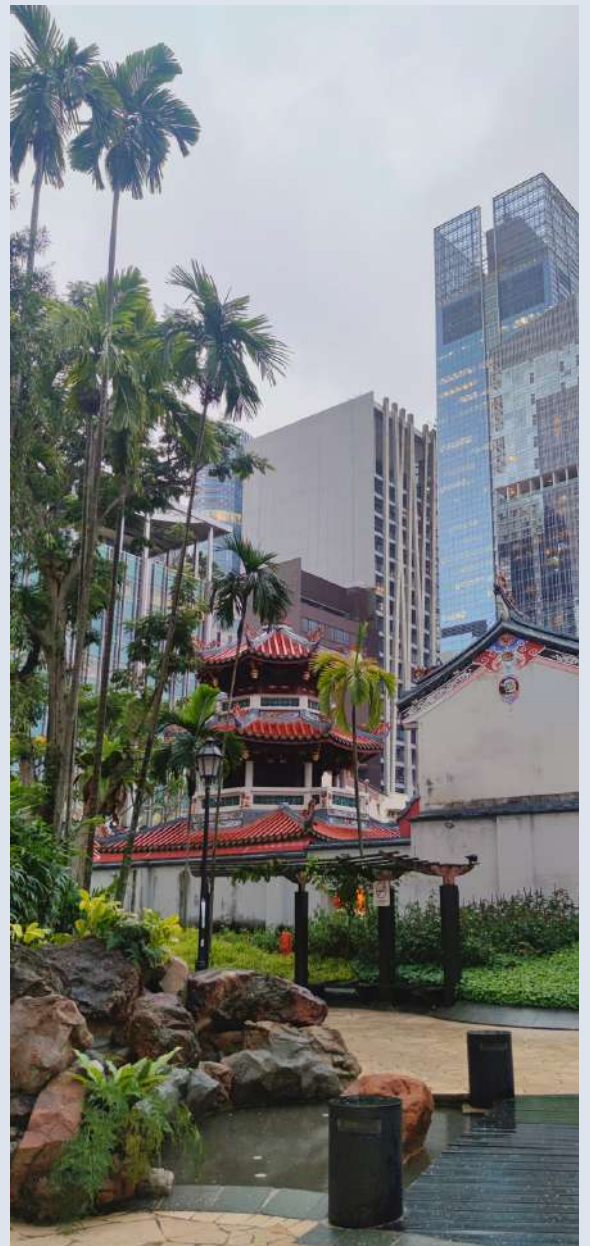
SINGAPORE

Singapore is a melting pot of cultures, making it hard to feel like a foreigner. The origins of this small country are nevertheless reflected in the **4 official languages** (Malay, Tamil, English and Mandarin) and in the **diversity of religions practised**. Hindu temples, Taoist temples, mosques and churches dot the streets and are scattered among dizzying skyscrapers.

“Few places are more interesting to a traveller from Europe than the town and island of Singapore, furnishing, as it does, examples of a variety of Eastern races, and of many different religions and modes of life”

“Peu d'endroits sont aussi intéressants pour un voyageur européen que la ville et l'île de Singapour, on y trouve des exemples d'une grande variété de races orientales, de religions et de modes de vie différents”

Wallace, *The Malay Archipelago*, 1869





This hyper-urban setting is set in a humid tropical climate that is particularly conducive to the development of luxuriant vegetation that invades rooftops, roadsides, balconies and even interiors.

“The vegetation was most luxuriant, comprising enormous forest trees, as well as a variety of ferns, caladiums, and other undergrowth, and abundance of climbing rattan palms.”

“La végétation était des plus luxuriantes, comprenant d’énormes arbres forestiers, ainsi qu’une variété de fougères, de caladiums et d’autres plantes de sous-bois, et une abondance de rotins grimpants.”

Wallace, *The Malay Archipelago*, 1869

In the time of our friend Alfred, Singapore consisted of "a multitude of small hills, about a hundred metres high, whose summits are covered with virgin forests [...]".

Today, the topography remains the same, but very few primary forests have survived.

Bukit-Timah, Singapore's highest point, is one of the last remaining.

bukit means *hill* in malay

A visit to this nature reserve, which has been protected since 1883, allows us to imagine what the vegetation might have looked like in Wallace's day.





"I lived for several weeks at Bukit-tima. [...] In about two months I obtained no less than 700 species of beetles, a large proportion of which were quite new.

"J'ai vécu plusieurs semaines à Bukit-tima. [...] En deux mois environ, j'ai obtenu pas moins de 700 espèces de coléoptères, dont beaucoup était tout à fait nouvelles."

Wallace, *The Malay Archipelago*, 1869



It was in this luxuriant jungle that Wallace collected most of the specimens he brought back from Singapore. He observed a phenomenal diversity of insects, which he explained by the abundance of dead wood. At the time, Chinese loggers were exploiting the forest, leaving behind a habitat of choice for invertebrates.



Meeting with

DR JOHN VAN WYHE

Before continuing our expedition, we need to delve deeper into the life and adventures of Alfred Russel Wallace. To do so, we set off to meet Dr John van Wyhe, a **historian at the University of Singapore who specialises in Darwin and Wallace**.

In his curiosity cabinet-like flat, we have the privilege of leafing through the original edition of Wallace's travel diaries, *The Malay Archipelago*, which dates from the end of the 19th century.

But it's also, and above all, an opportunity to talk to an expert in the field and to **deconstruct our preconceived ideas** about Wallace's life.

For example, the belief that Wallace was a poor working-class naturalist is one of the legends that persists about him. Coming from the same social class as Darwin, they were in fact both "gentlemen". Wallace left school at a normal age for his time, and received a good education, comparable to that of Darwin.

Another myth is that Wallace travelled in order to discover the 'mechanism' of evolution. However, it was with the aim of collecting species that he explored the Malay Archipelago.



Historical update

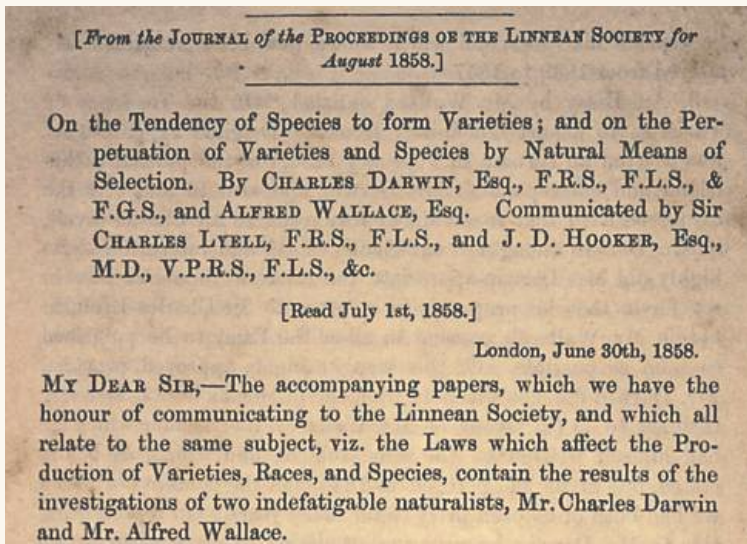


In February 1858, while on the island of Ternate, Wallace wrote an essay detailing his idea of natural selection. He shared his intuition about the evolution of species in a letter to Darwin, who found the essence of his own theory there. Darwin had already discovered and worked on the theory of evolution for more than 20 years, without ever having published anything.

The two naturalists were already in contact because Darwin bought specimens collected by Wallace for his research.

Wallace was still in the archipelago when his essay *On the Tendency of Species to form Varieties* was published at the same time as Darwin's article *On the Perpetuation of Varieties and Species by Natural Means of Selection*.

Probably one of the most important scientific papers in the history of biology, this article, co-authored by 2 eminent naturalists, was published on the 20th of August 1858, after having been read at the congress of the Linnaean Society in London on the 1st of June the samedi year.



Darwin & Wallace's paper on Natural Selection

The piece of history that most divides Wallace enthusiasts is undoubtedly the publication of "On the Tendency of Species to form Varieties". Many believe that Darwin and his colleagues published this essay without Wallace's consent. It is true that Wallace, being on the other side of the world, learned afterwards that his ideas had been shared alongside those of Darwin.

But his essay was published in accordance with the standards of the time. Wallace expressed no surprise that it had been read before the Linnean Society and, on the contrary, expressed great gratitude in a letter to his mother.

As we chatted, we strayed from the subject of Wallace, and John explained a process that surprised us. The vast majority of Wallace's buildings have now disappeared. In the archipelago, buildings deteriorate so quickly because of the humid tropical climate that they have to be rebuilt regularly. In Bali, for example, temples dating back hundreds of years are in fact constantly being renewed.

Our perception of cities has been turned upside down. Until now, we interpreted the dilapidated state of certain buildings as a lack of maintenance or as a sign of poverty. In reality, the **devastating effect of the climate** plays a predominant role in the appearance of buildings.

"Buildings as well as animals don't last in the Malay Archipelago"

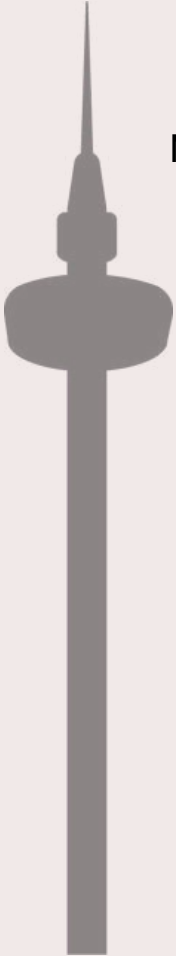
"Les édifices, de même que les animaux, ne perdurent pas dans l'archipel malais"

Dr John van Wyhe



Dr John van Wyhe

MALACCA



Wallace travelled through Malaysia in 1854 and spent more than two months in Malacca during the British occupation.

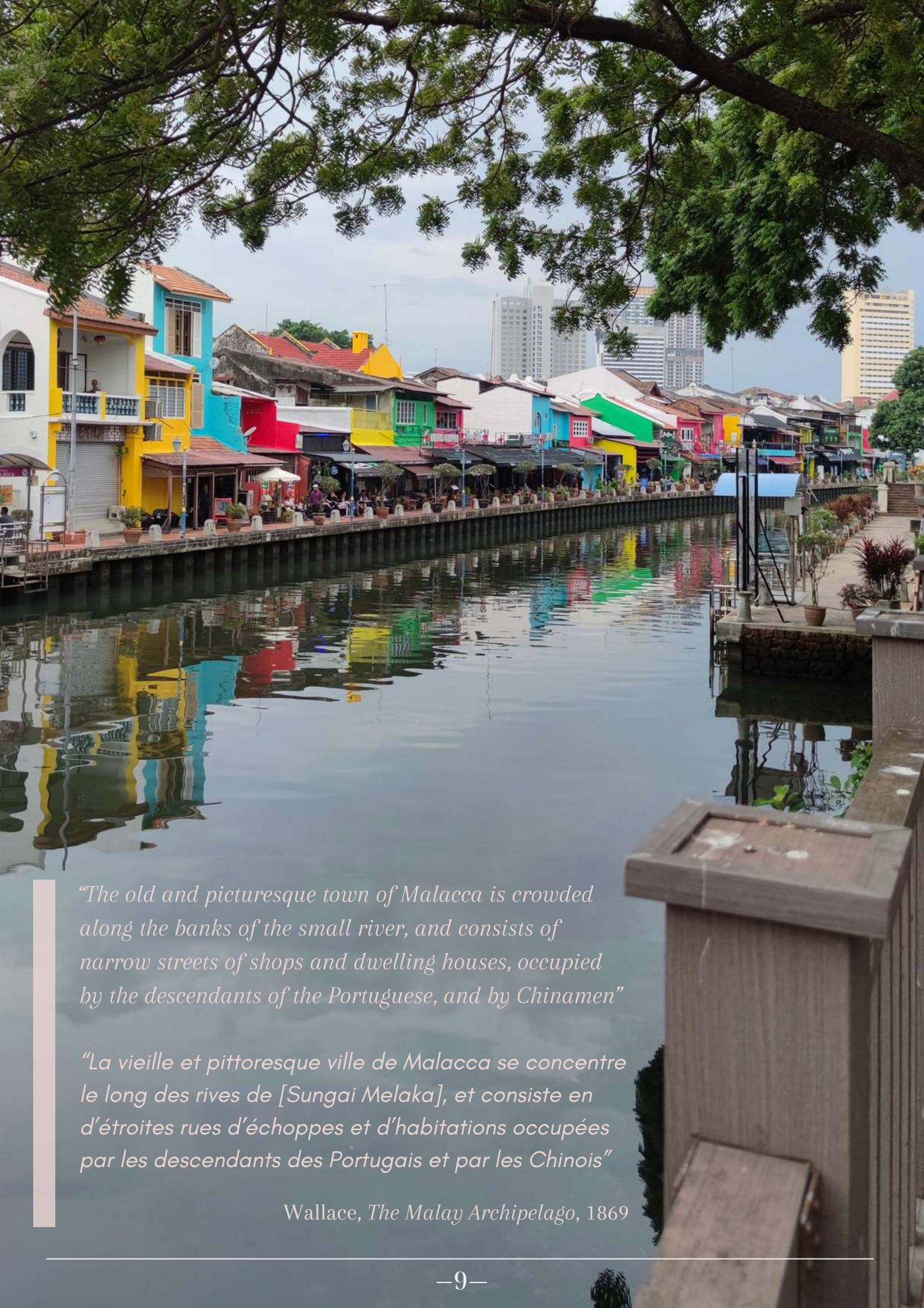
The city's highly heterogeneous landscape has been shaped by a long colonial past. **Portuguese**, **Dutch** and **British** influences blend with **Chinese** and **Malaysian** culture.



The red of the *Dutch* district



Jonker Walk at *Chianatown*



“The old and picturesque town of Malacca is crowded along the banks of the small river, and consists of narrow streets of shops and dwelling houses, occupied by the descendants of the Portuguese, and by Chinamen”

“La vieille et pittoresque ville de Malacca se concentre le long des rives de [Sungai Melaka], et consiste en d’étroites rues d’échoppes et d’habitations occupées par les descendants des Portugais et par les Chinois”

Wallace, *The Malay Archipelago*, 1869



Today, the historic heart of the city still resembles what Wallace described, with the exception of a few hotels that have sprung up. On the outskirts, Malacca has greatly expanded and skyscrapers are scattered here and there, amid a mosaic of fairly modest homes and businesses.



*"Handsome **woodpeckers** and gay **kingfishers**, green and brown **cuckoos** with velvety red faces and green beaks, red-breasted **doves** and metallic **honeysuckers**, were brought in day after day, and kept me in a continual state of pleasurable excitement"*

"De beaux pics et martins-pêcheurs, des coucous verts et bruns au visage de velour rouge et au bec vert, des colombes à poitrine rouge et des souimanga métalliques, m'ont été apportés jour après jour et m'ont maintenu dans un état continuél d'excitation"

Wallace, *The Malay Archipelago*, 1869

Here we are 200 years later and we can still see this beautiful diversity of colourful birds.

Kingfishers soar over the river while doves coo from the treetops.

Souimangas twirl like acrobats and woodpeckers capture the attention of attentive observers as they leap along the trunks.



BOTANICAL TREKKING

in Malaysian forest

The next stage of our adventure in Peninsular Malaysia takes us to the capital, Kuala Lumpur. This is where the **Forest Research Institute of Malaysia (FRIM)** is based. This centre for research into forestry, entomology, botany, zoology, etc. is set in the heart of a tropical forest of almost 600 hectares and several hundred plant species, mainly planted by man.

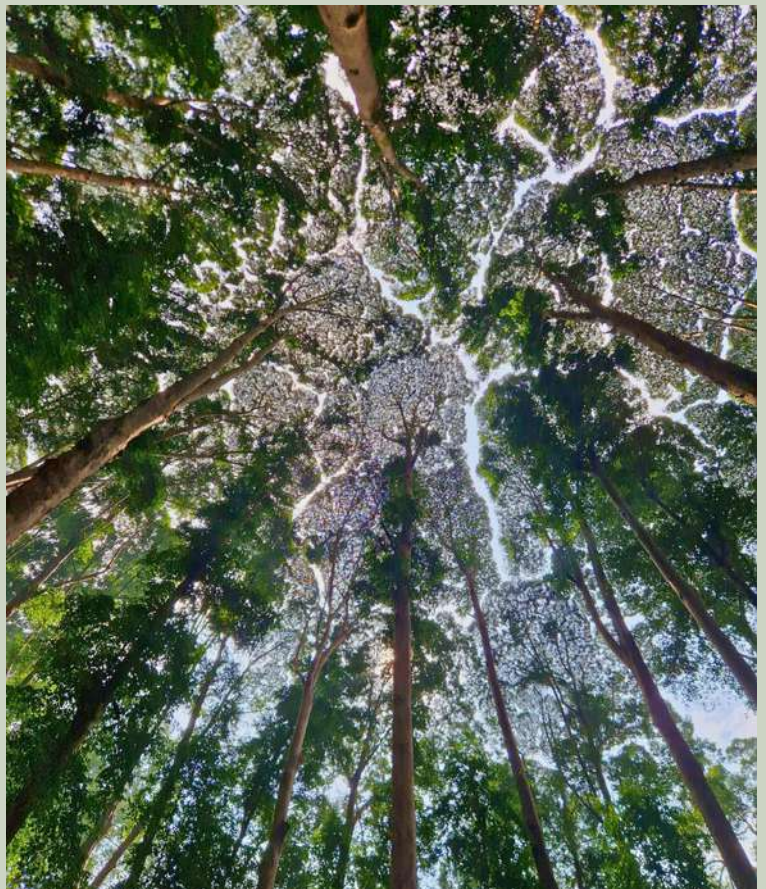
Here we meet Jalali, our naturalist guide, who will take us on a tour of the forest's botanical diversity.

From the medicinal virtues of the sap to the use of the trunk as a sounding board, each of the species in this forest has a **variety of properties.**

The most striking observation is that of the *Dryobalanops aromatica* canopy. Kapur, in Malay, are tall camphor trees native to the archipelago. Like a jigsaw puzzle, the tree crowns fit together perfectly.

This process, known as **crown-shyness** or **botanical shyness**, is caused by the emission of camphor from the leaves. This substance prevents contact between two neighbouring trees. In this way, no individual tree shades another and **intra-specific competition is limited.**

Being accompanied by a local naturalist is a particularly rewarding experience. Jalali took us on a multi-sensory tour: listening to birdsong, smelling plants, playing music with a tree trunk...



TROIDES BROOKIANA

an exceptional and mysterious butterfly

At the FRIM, we meet Dr Phon Chooi-Khim, an entomology researcher who wrote her thesis on *Troides brookiana*, formerly *Ornithoptera brookiana*. She tells us about her work on this butterfly, described by Wallace in 1855. The species, which he first observed on the island of Borneo, is also found in Peninsular Malaysia and Sumatra.



Dr Phon
mimicking the gliding
flight of *Troides* sp.

*My collection of butterflies was not large ; but I obtained some rare and very handsome insects, the most remarkable being the *Ornithoptera Brookeana*, one of the most elegant species known. This beautiful creature has **very long and pointed wings**, almost resembling a sphinx moth in shape. It is deep velvety black, with a curved band of spots of **a brilliant metallic-green color** extending across the wings from tip to tip, each spot being shaped exactly like a small triangular feather [...]. The only other marks are a broad neck-collar of vivid crimson, and a few delicate white touches on the outer margins of the hind wings. This species, which was then quite new, and which I named after Sir James Brooke, was **very rare**. It was seen occasionally flying swiftly in the clearings, and now and then **settling for an instant at puddles and muddy places**, so that I only succeeded in capturing two or three specimens. In some other parts of the country I was assured it was abundant, [...] but as yet **all have been males**, and we are quite unable to conjecture what the female may be like, owing to the extreme isolation of the species, and its want of close affinity to any other known insect.*

Wallace, *The Malay Archipelago*, 1869

Wallace had already identified some relevant information:

Wallace observed them “settling for an instant at puddle and muddy places”

Males gather in large numbers (up to several hundred!) around the calm waters emanating from hot springs.

This behaviour, known as **puddling**, is still poorly understood by researchers. The main hypothesis is that the males pump water from the hot springs to **extract minerals**. They expel the excess water through their abdomen at the same time as sucking on the proboscis stuck in the ground.

The specimens seen and collected “all have been males”

The females fly high into the trees in search of flowers to gather.

When the males join them for mating, they pass on the minerals collected during puddling, which are necessary for the development of the eggs.

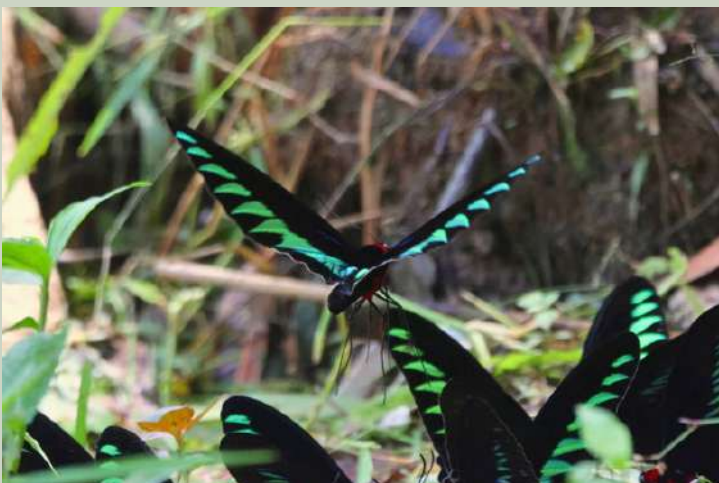
Spots of “a brilliant metallic-green color”

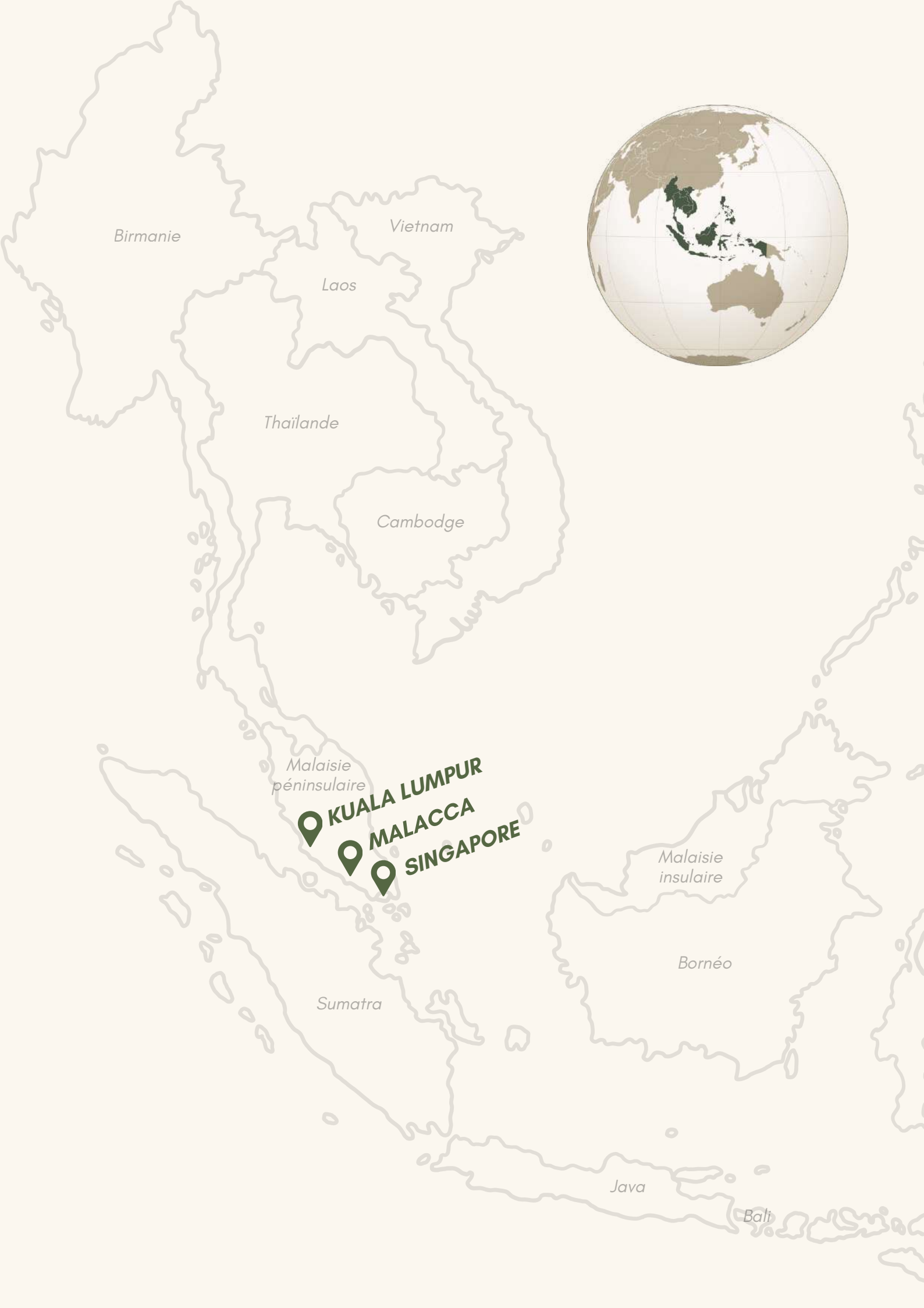
The colour of the wings is not due to pigments but to layers of scales that reflect part of the light rays. This is known as structural colour.

On the search for **TROIDES BROOKIANA**

After theory comes practice: we set off in search of the subspecies *Troides brookiana albescens* in the small village of Kuala Woh, north of Kuala Lumpur.

Hot springs abound along the river that runs through Kuala Woh. In this ideal habitat, we observe many males grouped together for **puddling**.





Birmanie

Vietnam

Laos

Thaïlande

Cambodge

Malaisie
péninsulaire

KUALA LUMPUR

MALACCA

SINGAPORE

Malaisie
insulaire

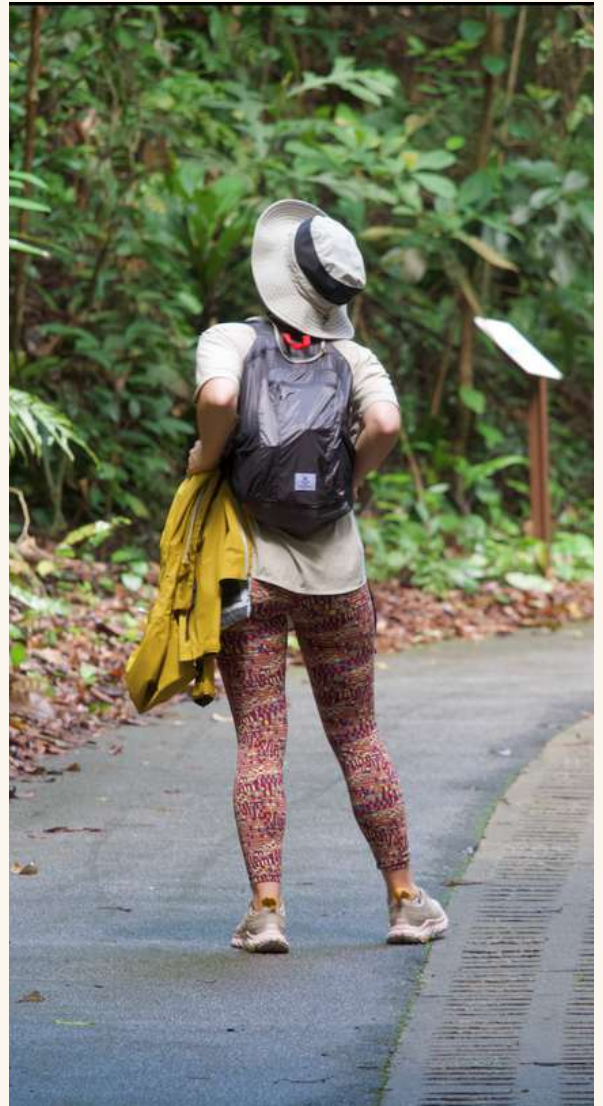
Bornéo

Sumatra

Java

Bali







All photographs were taken by the members of the French project *Sur les Traces de Wallace*, Quentin Delattre, Romain Ménager, Roxane Englaro and Justine Armengaud.