

# Imbak Canyon: Dipterocarps – the two-winged fruits

● Fourth of a series

**T**HE protected forests of Yayasan Sabah's Conservation Area of the Imbak Canyon in the centre of Sabah, are some of the most beautiful I have seen and are dominated by dipterocarp trees that once covered the island. The canopy reaches an average height of 50-60m, making them the tallest tropical rainforests in the world, while the tallest of the tall, the emergents, stand out above, reaching heights of 80m or more.

**The tallest tropical rainforest tree in the world!**

The current record is held by a tree in the Yayasan Sabah's sister Conservation Area of Danum Valley in eastern Sabah. This is a species of 'seraya kuning siput' or *Shorea faguettiana*, the local name coming from the round, yellowish, snail-like, lumps of resin often seen on the trunk of this species.

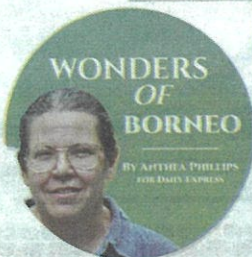
This tree, only discovered in 2016, reaches more than 90m (94.1) to be exact, into the sky – that's over 300ft, as tall as a 30-storey skyscraper – and it is the tallest tropical tree in the world! The tallest trees in the whole world, are, of course, the redwoods of California, which tower as much as 115m into the sky!

Discovered in 2016, through aerial three-dimensional forest mapping carried out with the help of the Carnegie Airborne Observatory based in the US, it was only earlier this year that the Sabah Forestry Department staff were able to reach the tree on the ground, and confirm its identity, the same species as the previous record-holder from Tawau Hills Park, which was only just over 88m tall!

Reaching the tree entailed a 6-hour walk from the Danum Valley Field Study Centre to the Ulu Purut Research Camp, but only about 150m into the forest beyond that. The same forest mapping study also located another 49 trees, all over 90m in height, mainly in the Danum Valley and the nearby Tabin Wildlife Sanctuary, but most of these have not yet been located on the ground.

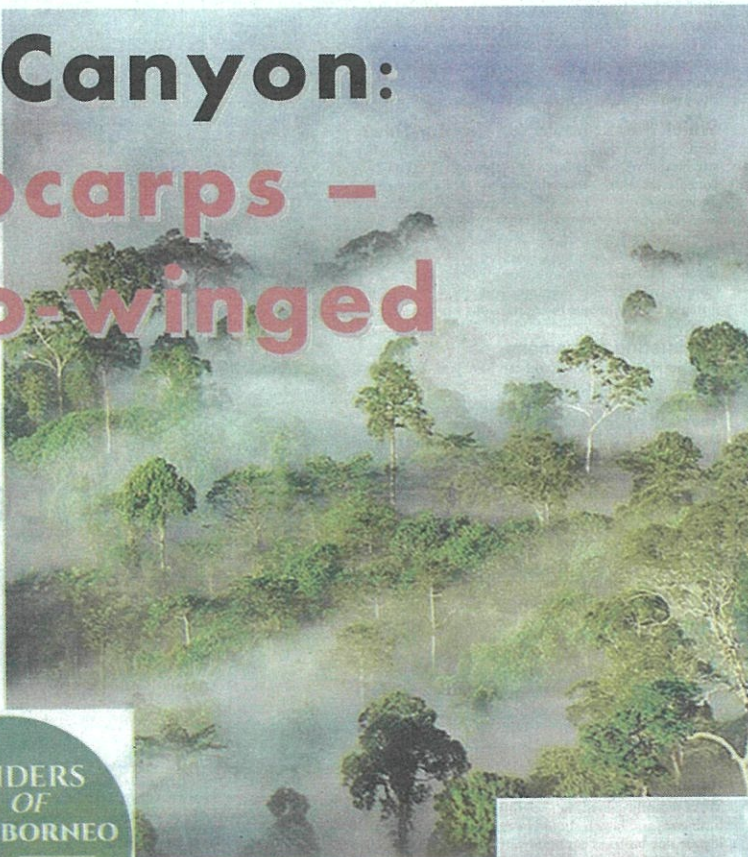
**Borneo a centre of diversity**

There are almost 700 species of dipterocarps worldwide, from the Americas to Asia, but Borneo is,



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She will gladly answer any question on this or related topics



(or was!), their kingdom, where around 270 different species have been recorded, more than anywhere else, and more than half of which are found only in Borneo.

Their abundance was their downfall, however, for dipterocarps have some of the best timber there is. The protected Imbak Canyon is one of the largest remaining areas of untouched dipterocarp forest in Sabah and of immense value in preserving the genetic diversity of our forests.

**The meaning of 'di-ptero-carp'**

The name 'di-ptero-carp' comes from the Latin, meaning 'two-winged-fruit', for the fruits of one group of species – the 'keruing' or Dipterocarpus species; are often rather large, with two wings like helicopter blades, which spin in the wind, helping to disperse the fruits to other areas.

During typhoon storms the fruits of some species can be carried quite a distance and at high altitudes – Tony Lamb reports once seeing a 'rain' of small dipterocarp seeds falling from a clear sky, about 5km off Kudat!

It was this group of species that gave its name to this whole family of magnificent trees – the Dipterocarpaceae.

**The dipterocarp forests of the Imbak Canyon are some of the most diverse in the world, with 79 out of the 267 species recorded for Borneo. Photo: A. Phillipps**

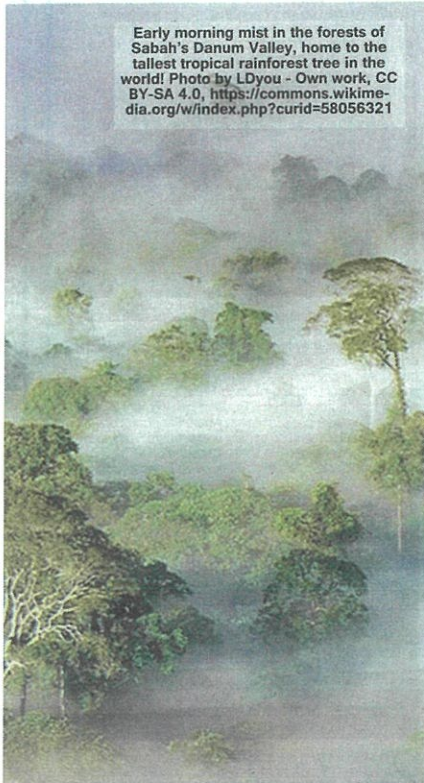


Other common groups of dipterocarps are 'seraya', 'meranti' and 'urat mata', species of *Shorea* and *Parashorea*, which have smaller fruits with five wings, and there are even some other species in which the wings are so reduced as to appear to be non-existent!

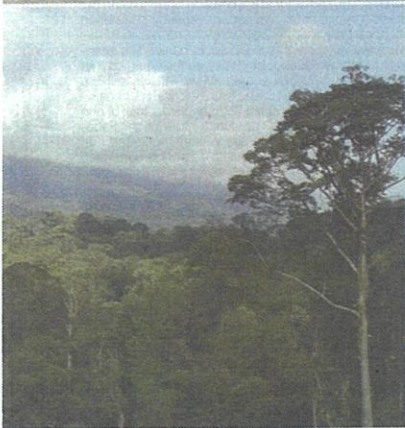
**Flowering & Fruiting**

Dipterocarps flower and fruit in what is called a masting pattern. Every few years, usually between five to seven, dipterocarps in the same area of protected forest will flower together in one huge burst of energy.

The canopy changes from shades of green to one mixed with splashes of cream, yellow and pink, turn-



Early morning mist in the forests of Sabah's Danum Valley, home to the tallest tropical rainforest tree in the world! Photo by LDyou - Own work, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=58056321>



ing to red and then brown, as the fruits develop. This pattern of flowering and fruiting ensures that so much fruit is produced, at least some will escape the predators, and grow into the next generation.

**Illipe Nuts**

At least two species (*Shorea macrophylla* and *Shorea stenoptera*), known as 'kawang' in Sabah, 'engkabang' in Sarawak, and 'tengkawang' in Indonesia, are the source of illipe nuts and illipe nut butter, major forest products in the past.

The fat round seeds are rich in oily fats which have a high melting point, giving them wide usage in the



These two-winged dipterocarp fruits show how the trees got their name. 'Di-tero-carp' means 'two-winged-fruit'. Photo by Mokkie, accessed through Wikimedia Commons.

cosmetic and food industries, one of which is as substitute for cocoa butter in chocolate.

In Sarawak, the boiled nuts are still occasionally eaten or sundried and pressed to obtain the oil which is made into cakes that can be stored safely for several years.

These oil cakes are eaten on top of hot rice, the melting oil running into the rice and adding flavouring. Sadly, with the decimation of the forests, these trees are now becoming harder to find.

Other species were exploited for their resins – the most famous of these being the legendary Borneo camphor, but that is another story.

**Where to see Dipterocarps**

There are, of course, other places to see dipterocarps in Sabah – the beautiful forest trails of the Rainforest Discovery Centre at Sepilok near Sandakan, have many different species, including the impressive 'Sepilok Giant', (*Shorea acutissima*) with snaking roots; the Borneo Rainforest Lodge at Danum Valley, with wonderful 'seraya majau' (*Shorea johorensis*) trees, with massive, plank-like buttress roots, and the curious stilt-rooted *Hopea nervosa*; Tawau Hills Park, with what used to be the tallest of all (now superseded by the tree in Danum Valley), Maliau Basin and Poring Hot Springs.

Even Pulau Gaya, a few minutes boat ride from Kota Kinabalu, has some dipterocarps – *Dipterocarpus grandiflorus* or 'keruing belimbing', has large, angled fruits, with wings as much as 22cm in length, one of the longest-winged dipterocarps of all!



The large fruits of *Shorea macrophylla*, often called illipe nuts, are rich and oily. The seeds can be eaten after being boiled or the oil can be extracted for use in food and cosmetics. Photo: A.Phillipps



Above: Young bright red fruits of the riverside 'kasigui' or 'neram', *Dipterocarpus oblongifolius*. The fruits fade and turn brown as they ripen. Photo: Gina Hamilton



Illipe nuts being smoked and dried at Sungai Lik, Kapuas Hulu, in West Kalimantan, Indonesia. Photo by Wibowo Djatmiko (Wie146) - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=8637709>