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A Scented Trail

A treat for the senses in Sarawak

What A Waste

The ocean is not a dumping ground

Diamonds in the Air

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Making Scents of Biodiversity

A perfumed garden in Paya Maga, Sarawak

TEXT BY ELAINE REMI

When I joined the Sarawak Biodiversity Centre (SBC) in 2011, I was given the opportunity to work on a project exploring natural scents with the tagline: "Biodiversity Makes Scents".

The project focuses on analysing and developing natural scents from Sarawak's biodiversity with the idea to create original biodiversity-inspired fragrances to be incorporated into consumer products that define the magnificent rainforests.

Being very enthusiastic about new things, I gladly took up the project not realising that the job would require me to 'hunt and trap' scents. I always thought that 'hunting and trapping' was the job of a zoologist!

The work on reconstituting scents from nature based on headspace technology is a technique pioneered by a fragrance chemist, Roman Kaiser at Givaudan, a Swiss fragrance and flavour company. Inspired by his work, SBC has been searching for opportunities to work on scented plants in Sarawak for the past five years or so.

When I joined SBC in 2011, I attended a talk by Ch'ien C. Lee who presented his research on pitcher plants. Ch'ien C. Lee is a professional photographer and botanist, specialising in carnivorous plants of the genus *Nepenthes*. During his talk, I was particularly attracted to the story he told of a scented pitcher plant he came across, called *Nepenthes chaniana*.

As he told us of the adventures he'd had and the story about the strong scent he experienced from a pitcher plant, I was convinced that the species *chaniana* was my ultimate target.



Nepenthes chaniana

N. chaniana is endemic to Northern Borneo and can be found at Paya Maga, Lawas. I had a vague idea of where Paya Maga is in Borneo and ever since that talk I had been hopeful that one day I would personally experience the scent of *N. chaniana* in the wild at Paya Maga.

Paya Maga, a highland plateau in the northern part of Sarawak is covered by pristine highland forest. It remained largely unexplored by outsiders until the Scientific Expedition to Paya Maga in 2010.

The biodiversity at Paya Maga has been reported to be very rich and numerous species of flora and fauna have been recorded and described during the scientific expedition. One such unique species is a primitive plant *Thismia goodii*, also known as the "blue cap lantern plant".

Apart from the flora and fauna, the ecosystem of Paya Maga itself is also exceptional. It is probably the only highland area in Sarawak that is covered with peat forest. There are also many picturesque waterfalls and streams.

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The SBC team - (L-R) Elaine Remi, Arlene Alicia, Tora Ranggan, Holed Jubai, Dawat Barok, Mohd. Nasar and Jafari Selutan.

It was almost two years after I first heard of *N. chaniana* that SBC organised an expedition to Paya Maga in June 2013 with a dedicated purpose – to track down and trap the scent of *N. chaniana*.

The team comprised three research officers: Arlene Alicia, a budding botanist who works closely with the indigenous communities; Holed Juboi, a microbiologist who has a keen eye for rare microbes; our dedicated support staff, Mohamad Nasar and Tora Ranggon who are veterans of many field trips; and me, a scent enthusiast.

We arrived at a stopover town called Lawas on 6 June and proceeded directly to Kampung Long Tuyu where we spent a night before journeying up to Paya Maga the next day.

Our journey started early in the morning in a four wheel-drive vehicle headed to the drop-off point at Sungai Retingu, 20 minutes from Kampung Long Tuyu.

We were joined by Pelidah Panus Taie from the District Forest Office of Lawas and two villagers, Dawat Barok and Jafari Selutan, our knowledgeable guides. Without them our mission to locate the scented *Nepenthes* would not have been successful.



Thismia goodie.



"Friends" encountered along the way.

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Our journey began on foot on the stretch of logging trail with a steep incline past Gunung Do'a to a shortcut trail. We hiked through the shortcut for about four hours before reaching the Paya Maga plateau (5235 ft.) at 6 pm, where we set up camp on the very same ground as the scientific expedition in 2010. I was relieved that we could retrace the route taken previously.

As we journeyed on foot up the trail following the steep gradients up to our destination the landscape transformed gradually from secondary forests along the old logging trail to mixed dipterocarp and lower montane forest at higher elevations. The Paya Maga plateau is majestically mostly covered with montane heath forest.

After breakfast the next day, our group went further up the plateau to locate *N. chaniana*. Our experienced

guide led us towards a place they call the "Secret Pitcher Plant Garden" - home to an abundance of different species of pitcher plants.

We hiked uphill towards Gunung Matalan following the existing dirt road. We had to be careful and sure-footed as any mistake could cause us to fall into a small waterway covered by undergrowth. Despite being cautious, a few of us did fall in and got pretty wet and mud-spattered.

After walking for about 40 minutes, we turned off onto a trail to our right and crossed a small stream, before we finally reached the "Secret Pitcher Plant Garden". The garden was roughly an hour's walk from the camp site and as we entered the area we could see an amazing variety of pitcher plants growing along the logging trail.

The area is covered by *kerangas* forest with exposed sandstone. I switched on the GPS device and dutifully logged the exact spot where *N. chaniana* specimens were collected during the scientific expedition in 2010.

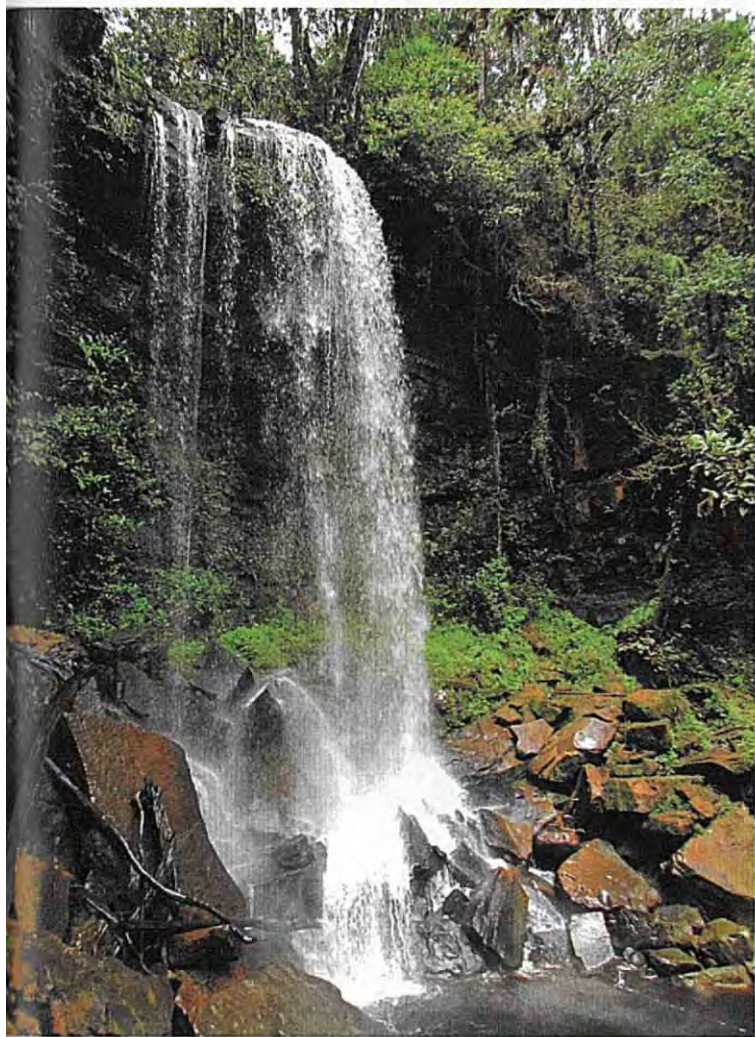


Nepenthes stenophylla.



Trapping the *Nepenthes chaniana*'s scent.

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Interestingly, we observed that there were a few different types of *Nepenthes* species growing closely to each other. We identified *N. chaniiana* after matching its physical characteristic to the record book and did the first sniff evaluation on its pitcher!

The whiff of the scent was as refreshing as the fresh air from the rainforests. The pitchers of *N. chaniiana* indeed emit a pleasant fragrance which could be described as fresh, clean and relaxing. The sheer anticipation to take a whiff of the pitcher and the fragrance immediately lightened my mood.

We were thrilled to set up traps for the scent which will be a new addition to the SBC Scent Library. We collected the air around the pitcher for seven hours. At the same time, the group collected samples for the herbarium and fluids from the pitcher plant for analysis. We also collected soil samples for microbe isolation.

As we explored the area, we noticed that there were only a few *N. chaniiana* growing compared to another species of *Nepenthes* that Arlene and I suspected to be *N. stenophylla*, which was also scented! We decided to get some specimens back for identification and herbarium collection.

On the way back to the camp site, we made a quick stop at a waterfall – one of the most scenic and natural sights I have ever seen. Everyone of us took a moment to soak up the peace and enjoy the surroundings. A beautiful rainbow arch greeted us at the foot of the waterfall, creating colours dancing across the spray of falling water against the afternoon sun. Here, I marvelled at the wondrous gifts of Mother Nature. We reached the camp site after sunset and made our way back to Long Tuvo the next morning.

Back in the laboratory at SBC, I kept my fingers crossed that the chemical analysis of scent collected from *N. chaniiana* would reveal some interesting compounds that could be made into a fragrance for a perfume.

Until I arrived at Paya Maga, the *N. chaniiana* scent was only something of an imagination. Being able to see it in its natural habitat and enjoying its scent will always be a special moment for me and be forever embedded in my memory. The experience at Paya Maga has served to reaffirm my calling; to help conserve the biodiversity for our future generations. 🐼

***Note:**

In Sarawak, all *Nepenthes* species are listed as "Protected Plants" under the Wildlife Protection Ordinance, 1998. Therefore, any person who collects, cultivates, cuts, trims, removes, burns, poisons, in any way injures, sells, offers for sale, imports, exports or is in possession of, any protected plant or any recognisable part or derivative thereof, except under and in accordance with the terms and conditions of a licence issued under the Ordinance, shall be guilty of an offence. The penalty is imprisonment for one year and a fine of ten thousand ringgit (RM10,000).

For more information on the Sarawak Biodiversity Centre please check out www.sbc.gov.my or email biosar@sb.gov.my.