

Insular City Zine

島嶼
城誌



2019 | SUMMER
細着藝術 Suaveart

Seeding Future: Rainforest Research Project
Aceh, North Sumatra, Indonesia
未來種子：熱帶雨林調查研究計畫 | 亞齊，北蘇門答臘，印尼

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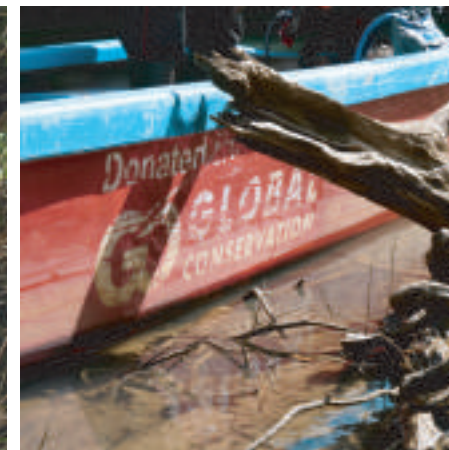


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Jao I-Ting | Chang Xiao Ling | Keting Chen
Yipei LEE | Wang Yu Ying

SEEDING FUTURE: RAINFOREST RESEARCH PROJECT

未來種子: 熱帶雨林調查研究計畫

島嶼城誌 # Insular City Zine # 細着藝術 # Suaveart # 列由澤生態系統 # Leuser Ecosystem # 北蘇門答臘
North Sumatra # 亞齊 # Aceh # 環境保育 # Conservation # 台灣 # Taiwan





ENJOY SEEING FUTURE RAINFOREST RESEARCH



First, arrive at Medan airport Kualanamu intl
首先抵達棉蘭國際機場



From Airport - Hotel
Distance-related fares
計程車 | 從機場到飯店

About
RP 250,000
for any distance
up to 45km



It is good to stay 1 night,
so that you can leave early
飯店住一晚，隔天出發

About
USD 32
A double bed
per night



NOTE 筆記 #1
Aceh people are keen to conservative Islamic ways.
Before visiting, you should do homework
with its culture, nature and manners.
亞齊人相當遵守傳統伊斯蘭教義；
前往該地區前，應該對當地文化、自然景觀、禮節等做足功課。

NOTE 筆記 #2
Preparing right stuff is very important.
Camera and recorder will be reported to authorities.
Respect the nature and local people is the best ways.
準備合適的隨身物品和衣物非常重要；向當地有關單位報備攜帶的相機與錄音筆
尊重大自然和當地居民會讓你的旅程更盡興。



Camera



Recorder



Water bottle



Medicine



Head lamp



Notebook & Pen



Indonesian Plug



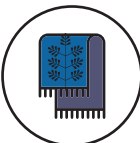
Mat



Water-proof backpack



Hat



Towel



Lightweight jacket



Sleeves



Climbing trousers



Long socks



Hiking boots

Return to the happiness of nature

回歸大自然的幸福感

No matter how much we
possess in the city, we can't
compare with the endless
circle of life in the forests
|
生活在都市的我們擁有再多，都比
不上森林中生生不息的生命力

Text, Photo: Yipei LEE

文、攝影：李依佩



Let's start it! 我們出發吧！

Early in the morning, we departed from Medan at 7:30 am and took more than 7 hours van trip to arrive at Gelombang village in South Aceh. We transferred to the wooden boat. On the way, we saw women who wrapped in salons bathing and doing laundry, and kids are playing in the river. The landscape is so peaceful and straightforward. It also rained halfway as the tropical weather changed often. After 2 hours boat trip, we arrived at the spot with lights. It was about 6 pm at that time; however, I didn't expect to climb the mountain trail and cross the stream in the dark. Finally, I saw lights in the tall wooden house and heard people's voices.

Maybe because of the rains and the lack of exercise, I felt exhausted while climbing the trail. All of a sudden, the warmth came to us, the chef has already helped us prepare hot jasmine black tea and traditional dishes. After having dinner, cold shower, and settle us down, we discussed the purpose of this journey and the ideas for collaboration. It will be the learning process of observation and research methods via interacting with local researchers and organizations. At the same time, it brings the thinking about the relationship between the rainforest and us.

The next morning, before exploring inside the rainforest, we recorded a short video after breakfast with three aspects; 1) What's your first impression of rainforest and where the memory comes from? 2) What do you want to collect/see/hear/obtain while you enter the rainforest? 3) Why is "Seeding Future - Tropical Rainforest Research Project" important to you? Then before the journey, artist and plant researcher, Keting Chen conducted a plant observation workshop. The main axis is to collect five plants that we regarded it's unique. When we returned to the research station, we discussed and played the games. Through the workshop, it generated the dialogue and interaction that our background, systematic, and scientific methods showed who we are.

我們一行人早上七點三十分從棉蘭出發，搭了七個多小時的車抵達南亞齊省的葛隆邦村莊，接著換乘長型木船，途中看見河上婦女裹著沙龍沐浴洗衣、孩童玩耍的純璞風光，也遇到赤道氣候變化半路下起雨來；經過兩個多小時船程，抵達研究站停船點。當時約莫晚上六點多，沒想到還需要在黑暗中再攀爬一小段山路，經過一條小溪，終於在七點半多看見高腳木屋裡的燈光與聽見人們的說話聲。

因剛淋過雨，加上平時欠缺運動，突然爬這段山路，讓我喘得上氣不接下氣，也以某種放空狼狽模樣現身在當地人眼前。不過，貼心的廚師早已幫我們準備好熱茶和晚餐，啜下一口暖暖熟悉的烘焙紅茶味，幸福感倍增。用過晚餐，洗過冷水澡，安頓好行李和床鋪後，大家一起討論這趟旅程的目的和各自需要協作的想法；透過各自不同的觀察研究方法，與當地人互動、與成員們學習與合作、同時思考雨林與我們的關係。

隔天早上，用完早餐踏入雨林前，每個人都錄了一小段影片，包含三個面向：1) 對雨林的印象/記憶來源為何？2) 進到雨林後，想採集/獲得/看見/聽到什麼？3) 為什麼這次的《未來種子—熱帶雨林調查研究計畫》對你/妳很重要？啟程前，藝術家兼植物研究員陳科廷帶我們做了一個植物觀察工作坊，主軸是收集五樣覺得很有特色的植物，回到研究站的時候我們進行討論和小遊戲。透過工作坊產生了對話和互動，讓不同領域背景的我們在系統和科學方法交流中認識我們自己是誰。



Rainforest landscape and sensory training 雨林景觀與感官訓練

For me, although walking in the rainforest just for 10 days, I walked through arrow paths to more extensive trails, observed various colors of mushrooms, orchids, and vines. I enjoyed touching the texture of Pacific ironwood, listening to the hornbill, and cicadas honk to each other. Furthermore, I also experienced the bite of leeches. Saw the hundreds of ants moving sweets together, the nest of needleless bees on the top of a centuries-old tree, and dozens of unique species of butterflies that don't repeated. Of course, we didn't miss the wild orangutan eating and resting freely in nature. The scenes are merely breathtaking.

Moreover, the growth of the trees in the rainforest is visible. It is so dense that the sunlight cannot penetrate the ground completely. It is difficult to recognize the direction and how far we have gone and where we are at the moment. Most of the time, we relied on rangers and researchers. They taught us the local and Latin names of rainforest plants and the ingredient function used as latex, fiber, food, watering, or gardening in our daily life.

HAKA arranged visiting rehabilitate areas for the members of Seeding Future, and guide us to plant a tree for the rainforest. They took us to the greenhouse explained which plants are taken into account the balance of the food for animals and human economic life. We entered the palm oil plantation to understand the impact of palm trees and environmental damage, discuss how national parks should define conservation areas. How institutions can effectively divide to complete a systematic database construction, and cooperate with external resources.

During the period of staying, our itineraries are entering the rainforest at 9 am after breakfast, then return to the research station to rest and have lunch at about 12 pm to 1 pm. In the afternoon, we keep walking either nearby the station or along with the river. Sometimes we followed the researchers to trace animal movement and take notes. The activities ended at about 6 pm. After dinner, we started the conversation, singing, and entertainment until midnight.

Before leaving Soraya Research Station, researchers and forest protectors told us, "You guys are fortunate to hear gibbon singing, orangutan mother feeds her child and play around so closely. You have encountered rare sights!"

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對我來說，短短幾天的雨林中行走，從蜿蜒小路到稍微開闊的寬道，觀察到各種顏色菌菇、蘭花、藤蔓植物環抱到仰望參天大樹；身體感受攀附在百年蓊鬱太平洋鐵木上的肌理；聆聽遠處犀鳥豪響到近身蟬鳴此起彼落；經歷無孔不入的吸血螞蝗的驚嚇突襲、看它吃飽後肥肥的模樣；幾百隻螞蟥協力搬家、無針蜂在百年大樹上的蜂窩建築功力、幾十種不重複的形形色色蝴蝶特有種，到野生紅毛猩猩自由在地進食休息的生活模樣，大自然無處不讓人驚豔感動。

此外，雨林中林木生長分層明顯，茂密到陽光難以完全穿透到地面，難以判斷太陽的走向，以及我們到底走了多遠、此刻身處何地。大部分時間，我們還是得依賴森林保護員的引導和知識傳遞，從他們口中了解到雨林植物的本地與拉丁名字，和不同部位用材、乳膠、纖維、食用、飲水、觀賞、觀花、觀葉等功能。

HAKA為《未來種子—熱帶雨林調查研究計畫》成員安排前往復育地區，讓大家為熱帶雨林再種下一棵樹；參觀熱帶雨林溫室，講解哪些植物可以成為動物的食物，漸漸擴大動物們的棲息地，哪些植物能夠兼顧人類經濟生活與動物共存的平衡。我們也進入棕櫚樹田，了解棕櫚樹與當地環境破壞的影響，討論國家公園該如何界定保育範圍，不同的機構如何有效分工完成系統性的數據庫建構，並與外界資源相互合作。

進駐研究站期間，我們的行程大部分是早上八點多用完早餐後，便進入雨林，約莫十二點到一點之間回到研究站休息用餐，下午再進去一次，或在研究站附近環境觀察動植物，與當地居民、研究員交談做筆記。六點多左右結束雨林活動，回到研究站晚餐和駐站人員聊天唱歌娛樂消遣，十二點左右就寢。

離開索拉亞研究站前，當地研究員和森林保護員跟我們說：「你們真的很幸運，可以在短短四天內，聽到長臂猿(Gibbon)在附近唱歌、紅毛猩猩(Orangutan)母子在這待這麼久用餐嬉戲。(…)難得的景觀都被你們遇到了！」



Follow the footsteps of orangutans 跟隨紅毛猩猩的腳步

The second research station, Suaq, is specifically for orangutan observation. It took most of our time to get used to the ecological environment under our feet, peat swamp area, where is more original and wilder. In the rainforest, researcher teams will make low but loud larynx sounds to identify each other's position. When the sounds are closer, it means the observed target is merely close - that's the moment we encountered the wild orangutans in person!

The forest protector who walked with us winked and said, "You are fortunate to meet the orangutan closely, and now it is her lunchtime, the fruit she eats is called Malaka." Tri, who is from National University Jakarta, said, "Look! She is dipping the ants crawling on a branch with her hairy hand, and then put it in the mouth to eat protein." As the orangutan headed for another tree, as long as the road is bumpy, Tri will use the knife from the waist, and immediately cut away to space.

At the research station, we also met a researcher from the University of Zurich, Luz, from Colombia, South America. She mentioned: "To observe the orangutan's movement, we must start at four or five in the morning because their daily routine is almost starting. After eating lunch, they will find a good place to nest. After 3 or 4 o'clock, they will take activities and dinner, and at the same time, look for a safe place to sleep. Sometimes they use thicker leaves make pillows." Around seven o'clock, Luz and other researchers returned to the research station to rest and eat and went to bed at ten o'clock.

The routine works and travels are very tough for these researchers. On average, each orangutan needs to track about 2,000 hours every month. Repeatedly observing behavior, recording the active area, collecting food, and feces to make specimens. In a short ten-day journey, we encountered international researchers who have been at the research station for half a year and Indonesian graduate students who entered the second year of research. The staff of these research stations has nearly three to ten years of experience accumulation. Although we come from a dynamic background of art curator, art administrators manager, journalist, video editor, artist, and researcher, during this period, we have built the trust between people and nature.

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來到專門研究紅毛猩猩的蘇瓦克研究站，生態環境更貼近原始熱帶雨林樣貌，大部分時間我們都走在泥炭沼澤地區範圍內。在雨林中，不同路線的研究隊伍，會發出低沉響亮的喉音辨識彼此方位，當聲音越來越靠近時，表示觀察目標已接近到—此刻，我們與紅毛猩猩相遇了。

與我們同行的森林保護員再度與我們使使眼色表示：「你們真的很幸運，遇到紅毛猩猩離我們很近，現在正好是她的午餐時間，她在吃的果實是 Malaka」雅加達國立大學研究員 Tri 說：「你們看，她現在用手上的毛藤樹枝上爬的螞蟥，然後再放入口中食用，補充蛋白質。」當紅毛猩猩往某棵樹前進時，只要路不是那麼好走，Tri 就會從腰上抽出一把刀，瞬間前方的空間就給讓了出來。

在研究站裡，我們還有遇到蘇黎世大學研究員，來自南美洲哥倫比亞的 Luz 她提到：「為了觀察紅毛猩猩的行動，我們必須早上四、五點出發，因為牠們一天作息差不多開始了，中午吃完飯後，牠們會找個好地方搭巢午憩。三四點後又開始活動跟晚餐，同時尋找一處安全的地方，搭巢睡覺；紅毛猩猩很聰明，有時候牠們會用比較厚的葉子做枕頭。」大約到七點多，Luz 與其他研究員陸續回到研究站休息用餐，十點多就寢。

這些研究員的工作與行程非常辛苦，平均每隻猩猩非常每個月需要追蹤2,000小時，重複紀錄活動路線、觀察行為，還有採集食物、糞便製作標本！短短地十天行程，我們遇到已在研究站待半年的國際研究員，也遇到第二年進駐研究的印尼研究生；這些研究站的駐紮工作人員都有將近三到十年不等的經驗累積。我們雖然來自藝術策展、藝術行政、記者、影像工作者、藝術家兼研究員的多元背景，但在這期間，建立起一種人與人之間、與自然的信任感。

When we left, we still think about what else we can do 離開同時，我們思考著還能做些什麼

Before we officially left the rainforest, we recorded another video. In response to us who just entered the rainforest: 1) What's our feedback after entering the rainforest? 2) What did you gain during the period? 3) Do you want to continue participating in such projects in the future? Or how will you pass your thoughts to others? Lastly, I also invite Mr. Itham, who is with us from HAKA, and rainforest researcher, Mr. Ibrahim, to share their experience with us these days.

After Suaq research station, we visited the Sumatran Elephant Rehabilitation station operated under the Indonesian government. The goal is to help injured elephants to integrate into group life, and persecuted by humans to adapt returning to the wildlife. Or, they can survive in-between the way of the elephant migration path. At the moment, there are four elephants in the rehabilitation station. The good news is that the mother elephant was successfully helped to conceive and gave birth to a baby elephant. I hope the baby elephant will return to the wildlife one day.

For me, the first time I stepped into the rainforest was more comfortable than I initially thought. The season we visited is between the dry and rainy seasons. Looking around, it was like transitioning into spring with dead leaves falling and green emerald sprouting, intense and fresh smells. Besides, while staying at the research stations, we didn't have internet access. We could only get along with nature and the people around us. Indeed, it was a bit uncomfortable and awkward at the beginning, but after returning to urban life, everyone missed the fact that there were no technology products. In time, my whole body seemed to be purified by nature (laugh).

As we leave, we all think about
What else can I do ...

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正式離開熱帶雨林前，我們又錄了一段影片；呼應剛進入雨林前的我們：1)進入雨林後的心得？2)你獲得了什麼？3)未來你會不會想要再繼續參與這樣的計畫？或是會用什麼方式傳遞你的想法給其他人。最後，也邀請一路陪伴著我們的伊拉翰和森林保護員亞伯拉罕先生分享這幾天與我們相處的心得。

告別蘇瓦克研究站後，我們還來到蘇門答臘象的復育保護站，這個是由印尼政府管轄的計畫，目標是幫助融入不了群體生活、受人類迫害的大象適應回到野外生活；或，還能夠在大象固定的遷徙路徑，以半野放方式生存。目前保護站有四隻大象，好消息是近半年成功幫助母象受孕，生出一頭小象，希望可以幫助這小象回到野外自然環境生活。

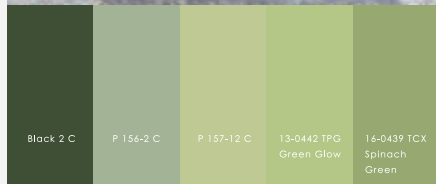
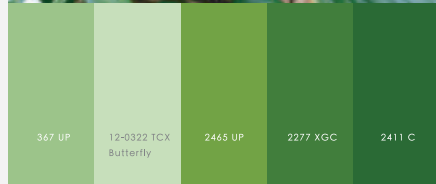
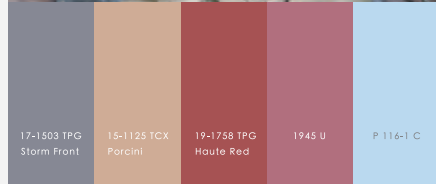
對我來說，第一次踏進熱帶雨林比原本想像的還要自在。我們拜訪的季節正好為旱、雨季之間，像是進入春季般的過度，枯葉已落而新芽萌起。舉目四望，深色老葉中偶夾帶著翠綠嫩芽，讓人會嗅到一股濃烈而又清新的氣味。此外，待在雨林研究站期間，我們沒有網路可以使用，只能和大自然及周邊的人相處，一開始當然有點不適應，不過回到城市生活後，大家反而特別懷念沒有科技產品束縛的時光，全身上下好像被大自然淨化了(笑)。

離開的同時，我們都思考著
還可以再做點什麼 ...



Color in Rainforest Wonderful Land

Color in Rainforest 雨林色彩
Wonderful Land 多彩多姿





HORNBILL ON THE TOP OF THE TREE

樹上的犀鳥

Photo Credit: Jao I-Ting

Memory prints in rainforest

雨林印記

Text, Photo: Keting Chen
文、攝影：陳科廷

Taiwan is on the Tropic of Cancer and has a tropical climate in the south. However, the rainforest is always a concept for biology, geography, or news for us.

Before leaving for the rainforest in Sumatra, I accidentally found out the hard disk during the master course ten years ago, and all of a sudden, the memories that I had studied the rainforest came to my mind. I thought it would be a glimpse of the rainforest. After leaving school, I work and travel around. I went to many tropical countries and islands back and forth, and unconsciously the journey brings my heart to the south and the equator. The rainforest trip in Sumatra Indonesia is like the realization of all the waiting. After traveling such long distances across the land, sea, and air, the light has gradually disappeared in our eyes.

The night follows us to the research station in the forest nearby the river shore. The voice becomes my first, a real rainforest experience:



Rainforest Characteristic I
"Animals develop varied and complex sounds to identify each other in dense forests where the sight is blocked."

Insects, frogs, and geckos croaked. Everyone in the staggering research

station moved their feet and struck the high wooden floor. How could the overlapping sounds make me remind my dormitory living on Palau Island? The next day, the dawn sparkled into the branches of the wooden house. We put on the equipment and see the reality of the rainforest.

Rainforest Characteristic II *"Plants not only grow rapidly, but also develop different ecological habitats for resources (such as soil, light, humidity), and also reflect significant stratification at height."*

Vines are climbing on tall trees. Orchids, lichens, and mosses, those epiphytes are living on the bark. Ferns and pandanus are growing close to the wet surface. Fungus and various mushrooms are relying on dead wood. Parasitic orchids, boletus, and more animals are living on the ground. They can shuttle, forage, digest, reproduce, and breed.

Stepping out of the rainforest, I was crossing the river to approach the waterfall. The dark volcanic lava rock, coexisting hard and smooth with the water, there are many Araceae lives inside the stones and gaps, as are begonias and dancing ladies gingers.

Although this forest is different from the biology textbook in my memory, it has grown millions of times in my mind. It turns out that I live in such a forest at all; Taiwan's Fushan, Pinglin, Xianjiyan, Hengchun, Orchid Island, Nicaragua's riverbanks, Palau's wild farm, lakeside swamps, and forests. I've been to the rainforest long ago!

Rainforest Characteristic III *"Plants have evolved a variety of special structures and growth patterns to adapt to the rainforest environment, such as buttress, aerial root, strangler, and trunciflory."*

There is no specific pattern for the rainforest. It is like the composition of the creatures, which is varied and diverse. The rainforest is composed of environment, geography, and biology, which shape the rainforest it becomes. The rainforest is not so vague and can't be with the proper vocabulary.

Even though there is no tropical rainforest environment in Taiwan, the rainforest is still around our lives. It is easy to observe and obtain lots of ornamental plants, food, spices, seasonings, medicines, wood such as anthurium, bird of paradise flower, ginger, orchid, breadfruit, jackfruit, nutmeg, clove, cinnamon, pepper, vanilla, oil palm, coconut, rattan, rubber, cinchona, coffee, cocoa, teak, rosewood, ebony, and so on around you and me. Moreover, people in the rainforest survive to produce clothes, shoes, and electronic products with minerals and oil under the dirt. And the air we breathe has rainforest.

臺灣跨在北回歸線上，同時有著南方熱帶的氣候，但熱帶雨林對於我們來說總只是生物、地理課或新聞上的概念。

出發蘇門答臘雨林行前，不小心翻開十年前研究所的硬碟，才猛然想起我修過熱帶雨林學，想必那時也是抱著想一窺雨林的樣態吧！離開學校後工作、旅遊，前後去過許多熱帶國家、海島，不知不覺中把自己的心往南方、向赤道拉近。

印尼蘇門答臘的雨林行像是這一切等待的實現，長距離跨域陸、海、空的疲憊移動後，光線已逐漸在視窗裡消失，夜跟著我們抵達河岸森林裡的研究站，聲音成為我第一個真實的雨林感受：

雨林特徵一「動物為了在視線阻隔的茂密森林中辨識彼此，而發展出多變複雜的聲響。」

蟲、蛙、守宮鳴叫，交錯研究站眾人移動腳步敲響高腳木地板，相互交疊的聲音怎就叫我響起生活在海島帛琉的宿舍。隔日，晨曦穿透枝葉落在木屋的外圍，我們穿上入林裝備，真正看見雨林。

雨林特徵二「植物快速生長，彼此為了爭取資源(如土壤、光線、濕度)，發展出不同的生態棲位，也反映在高度上明顯分層。」

攀爬在高樹上的藤；附生在樹皮上的蘭花、地衣、蘚苔；貼近潮濕地表生長的蕨類、露兜；枯倒腐木上的木耳、靈芝、各式菌蕈；在地上冒出的寄生蘭、牛肝菌等，還有更多的動物在當中穿梭、覓食、消化、繁衍、孕育。

踏出森林，橫跨河道，走近瀑布，黯黑的火山溶岩，堅硬又圓滑地與水共存，更多的天南星盤在石上、縫隙中，秋海棠、舞花薑也是。

這樣的森林雖與我記憶中生物課本：研究人員所拍的熱帶雨林相片不同，但卻早就在我的記憶裡生長過千百萬回，原來我根本就在這般的森林裡生活：臺灣島上的福山、坪林、仙跡岩、恆春、蘭嶼；尼加拉瓜的溯溪河岸；帛琉農場的外圍野地、湖畔沼澤、溪流森林。其實我早就去過雨林！

雨林特徵三「植物演化出多樣的特殊構造、生長方式來適應雨林環境，如板根、氣根、纏勒、絞殺、幹生花。」

雨林其實沒有固定模板，就如當中的生物組成，歧異且多樣，這些環境、地理、生物都成為塑造雨林的養分。雨林也不是那樣模糊、摸不著頭緒的專有詞彙。

就算台灣沒有真正熱帶雨林，但雨林還是在我們生活左右：火鶴花、天堂鳥、薑、蘭、麵包果、波羅蜜、肉豆蔻、丁香、肉桂、胡椒、香草、油棕、椰子、黃藤、橡膠、金雞納、咖啡、可可、柚木、紫檀、黑檀等。許多觀賞植物、食物、香料、調味料、藥品、木材，甚至雨林底下所蘊藏的石油、礦物。此外，在雨林的人們為了生存，製造出來的衣服、鞋子、電子產品等，還有我們呼吸的空氣都有著雨林。



A photograph of a tropical river scene. The foreground shows a calm body of water reflecting the surrounding lush greenery. A large, weathered log lies horizontally across the middle of the frame, partially submerged. The background is filled with dense tropical vegetation, including tall trees and thick ferns, under a bright blue sky with scattered white clouds.

VISITING UPSTREAM

參觀上游

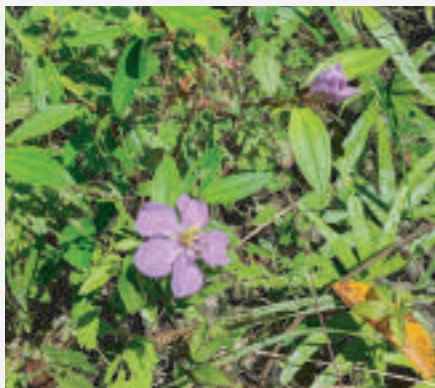
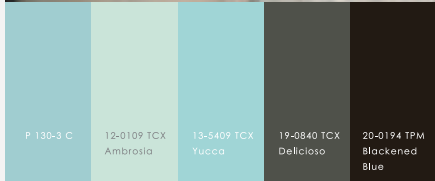
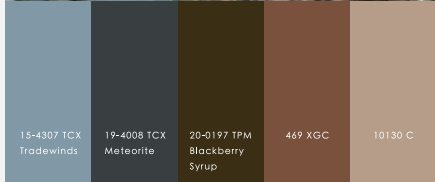
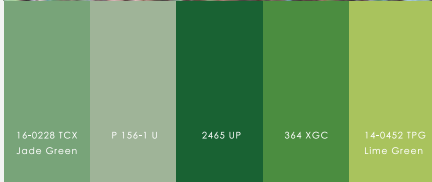
Photo Credit: Yipei LEE

Color in Rainforest

Wonderful Land

Color in Rainforest 雨林色彩

Wonderful Land 多彩多姿



(Image credit: Nicole Jao) (照片來源：趙乙庭)

North Sumatra rainforests face hotter, drier climate

北蘇門答臘雨林正面臨更熱、更乾燥的氣候

Text: Nicole Jao,
Translation: Yipei Lee
文：趙乙庭、翻譯：李依佩

In early August, I went on a ten-day journey across the Indonesian provinces of North Sumatra and Aceh. The trip was part of a larger project started by a group of conservationists from Indonesia, and art institute from Taiwan whose mission was to inspire action and encourage like-minded individuals who care deeply about protecting the rich natural habitat in Indonesia.

在今年八月初，我參與了為期十天的北印尼蘇門答臘和亞齊省之旅。此旅程是由台灣藝術單位與印尼當地環境保育組織共同發起，目的是激發行動並鼓勵志趣相投的人，能更深切關心保護像印尼這樣豐富的自然棲息地。

At the crack of dawn, we load our belongings in a mini-van in front of a Hotel in Medan, the capital of the North Sumatra, and prepare for a nine-hour bumpy ride through muddy and hilly paths eastward. We arrive at a small fishing village just before sunset and hop on a narrowboat with our gear and backpacks. Our boat travels up along the Alas River, the setting sun dimly lights up the sky in yellow gold. Except for the splashing of waves and rumbling of the motorboat engine, it is quiet and peaceful as the evening fall. Not long after, we finally arrive at the Soraya Research Station.

The outpost is located in the Leuser Ecosystem, which composes of 2.6 million hectares of rainforests, peat swamps, and meadows spanning the northern Sumatra. Globally, it is recognized as one of the richest natural rainforest ecosystems and is the only natural habitat where critically endangered species like orangutans, rhinos, elephants, and tigers co-exist.

The natural ecosystem is diminishing at an alarming rate due to both human development and climate change.

拂曉時分，我們在北蘇門答臘省首府棉蘭一家旅館前面的小型貨車中放上行李，準備接下來9個小時崎嶇不平的山路行駛。日落前，我們抵達一個小漁村，帶著隨身裝備和背包換乘另一艘窄船，沿著阿拉斯河(Alas River)上行。傍晚時分，金色夕陽在昏暗中照亮了天空，除了水花飛濺和發動機隆隆聲外，整個氛圍充滿安靜與祥和。不久後，我們終於抵達了索拉亞研究站。

這個保育前哨站位於由熱帶雨林、泥炭沼澤和橫跨蘇門答臘北部森林組成的260萬公頃列由澤生態系統。它被國際認為是最豐富的天然熱帶雨林生態系統之一，同時也是瀕危物種如紅毛猩猩、蘇門答臘犀牛、大象和老虎僅存的自然棲息共地。

由於人類發展和氣候變遷，自然生態系統正在以驚人速度消逝。

Kingdom of oil palms

油棕王國

In daylight, patches of oil palms scattered in the lush greenery on both sides of the river and the narrowboats filled with glazed black and bright red seeds of oil palms roaming back and forth the river are tale-tell signs of the burgeoning palm oil industry activities in the area that is supposedly under protection.

We are advised not to use snap photos of the illicit activities.

The oil palm industry supports the livelihoods of millions of workers living in Indonesia. Even so, it is important that the country finds a way to be sustainable, Irham Hudaya Yunardi, communication officer at local environmental campaign and advocacy organization HAKA.

Indonesia is the world’s largest producer of crude palm oil with total output recorded last year reaching 42 million metric tons, according to the Indonesian Palm Oil Entrepreneurs Association (GAPKI). Sumatra and the neighboring islands account for over 90% of the world’s palm oil production.

The booming industry, which contributed around 2.46% to the country’s gross domestic product (GDP) in 2017, comes at a cost on the local rainforest ecosystem. Illegal forest clearing activities take place on the island every day to make way for more economical plants.

•
白天，河的兩岸充斥著綠油油的油棕樹，船上則是載滿了黑色中帶著鮮紅色的油棕果實往返，這是棕櫚油工業蓬勃發展後，在本來應該受到保育的地區，天天上演的日常景觀。

我們被提醒，不要對這些非法行為拍照。

棕櫚油產業為印尼數百萬工人提供了生計。當地環境保育組織 HAKA 傳播經理伊拉翰認為，即便如此，對該地區來說找到一種可持續發展的方法仍是相當重要的。

根據印尼棕櫚油企業家協會 (GAPKI) 數據，印尼是世界上最大棕櫚油原產國，去年總產量高達到4,200萬噸。蘇門答臘及周邊島嶼已佔世界棕櫚油產量的90%以上。

這項蓬勃發展的產業在2017年為印尼國內生產總值 (GDP) 貢獻了約 2.46%。然而，我們必須要知道，這是犧牲當地雨林生態系統作為代價的，島嶼上每天都在發生非法砍伐行為以換取經濟作物。

The last refuge 最後的避難所

Meeting the eyes of orangutans is perhaps one of the most memorable wildlife encounters I have had.

A mother orangutan was feeding in the tree with her baby just on the edges of the forest, a few feet away from the research station. Swinging from one tree to another, the rustling sound of leaves allows us to spot them easily in abundant greenery. Strangely enough, it was not the foreignness, but the familiarity that struck me. Their facial expressions deliver emotions, thoughts, and feelings just like us. And their eyes speak, just like ours.

The orangutan population that resides in the forest has adopted its unique “culture,” according to a German researcher at the research station. In fact, the language and behavior of orangutan populations on the Sumatra island vary with geographic differences, which suggests that losing a population of orangutans would mean losing a unique culture. There aren’t many of these orange-furred creatures left the region anymore. The effects of climate change and man-made fires have led to the loss of their habitat and vital food source.



A truckload of oil palm fruits en route to the extraction facility. (Image credit: Nicole Jao)
一卡車運送油棕果實過程中。(照片來源：趙乙庭)



Charred paradise. (Image credit: Nicole Jao)
燒焦天堂 (照片來源：趙乙庭)

We took a pit stop on the side of the road on the way to Soraya Research Station. As I gazed into the distant greens, I noticed the smoke from a burning patch of land.

•
在我們前往索拉亞研究站途中的休息站。當凝視遠處果嶺時，我注意到一片正在燃燒著的土地冒著濃煙。

親眼見到的紅毛猩猩應該是我此身最難忘的野生動物之一了。

一隻紅毛猩猩母親正帶著她的孩子，在森林邊界距離研究站只有幾英尺的地方餵食樹葉。從這棵樹擺動到另一棵樹，樹葉沙沙作響的聲音使我們可以輕鬆地在茂密的綠色植物中發現它們。一股奇妙、似曾相識感衝擊著我的內心。牠們的臉部表情就像我們一樣傳遞著情感、思想和感覺；牠們的眼睛像我們的靈魂之窗一樣會說話。

根據研究站的一位德國研究人員提到，居住在森林中的紅毛猩猩族群已適應了其獨特的“文化”。事實上，蘇門答臘島嶼上的紅毛猩猩族群其語言和行為，因地理位置分佈而有差異；這意味著若紅毛猩猩的數量不斷下降，我們也將失去物種的獨特文化。氣候變遷和人為火耕的副作用已導致物種棲息地和重要食物來源減少。

Warmer, drier summers 溫暖乾燥的夏季

After spending four days at Soraya, we head northwest to the peat swamp at the Suaq Balimbing Monitoring Station, an outpost dedicated to studying the orangutan species located on the border of Gunung Leuser National Park. Straddling the border of North Sumatra and Aceh, the national park covers roughly 1 million hectares of tropical rainforest.

The boat trip into the peat swamp was a rough ride. The water level of the river that leads into the peat swamp was significantly lower than normal levels during dry seasons that our boat had trouble passing through. The warming climate not only dried up the water in the river but affected the water quality as well, leading to a noticeable drop in the number and diversity of wildlife species, according to the rangers of the national park.

The rise in temperature in the Southeast Asia region, new research shows, can be attributed to deforestation.

I wonder, if a nature reserve, supposedly protected from the harms of tourism and commercial activities, can not be spared the environmental consequences, what can?

The river snaking through the Leuser Ecosystem is the life source for all living things that reside in the area, not only the wildlife in the river and above ground, but also the people living in villages scattered alongside it.

Sometimes people miss the point thinking that forest protection efforts are done solely to save the wildlife, said Yunardi. Protecting the local ecosystem from exploitation also means protecting the livelihood of local communities that reside in on the island, he said. “The forest is very important to the people of Aceh because for generations they have been very much dependent on the existence of the ecosystem for their livelihood—that would mean for the source of water, the source of clean air, the source of food, as well as, the source of medicines. Especially for the people living in surrounding villages, it is very important to protect the forest because it could mean that we are putting lives in danger,” said Yunardi.



Our first encounter with wild orangutans at Soraya Research Station. (Image credit: Nicole Jao)
我們在索拉亞研究站遇到的第一隻野生紅毛猩猩。(照片來源：趙乙庭)

在索拉亞研究站待了四天之後，我們向西北前進，來到泥炭沼澤地區的蘇瓦克研究站；該站專門研究國家公園邊境、橫跨北蘇門答臘和亞齊的邊界，佔地約100萬公頃腹地的熱帶雨林的紅毛猩猩物種。

因氣候變遷所導致河流水位明顯低於干旱季節正常水位，讓我們乘船進入泥炭沼澤區時，前進艱難。據國家公園森林保護員說，變暖的氣候不僅使河水幹涸，還影響了水質，導致野生動植物的物種數量和多樣性明顯減少。

新的研究發現，東南亞地區溫度升高可歸因於森林砍伐。

我思考著，如果自然保育區免於觀光旅遊和商業活動的危害，是否能倖免於環境效益的後果，那又會怎麼樣呢？

蜿蜒穿過列由澤生態系統的河流，不僅是河岸與土地上的野生動物物，還包括與之毗鄰的村莊居民生命之源。

有時人們會忽略這點，認為森林保育工作是為了保護野生動植物而進行的。然而，保育當地生態系統免於剝削同時，也守護著島嶼當地村民的生計。森林保護員尤納迪提到：「森林對亞齊人非常重要，因為世世代代的人仰賴雨林生態系統而生存，這意味著我們的水資源、乾淨的水、食材以及藥品等來源都是取之於森林。」此外，「特別對生活在周圍的村民來說，保育森林非常重要，因為我們正將自己生命置於危險之中。」



BLOOMING FRUIT

盛開的果實

Photo Credit: Chang Xiao Ling

SUAVEART @ SEEDING FUTURE PROJECT

2019. JULY. 31- AUG. 8

Date	09:00 - 12:00	12:00 - 17:00
7/31 Wed	1. Fly into Medan	2. Meetup & orientation
8/1 Thur	Travel from Medan to Gelombang and to Soraya Research Station	
8/2 Fri	1. Interview with members 2. Walk into the rainforest 3. Observe and learn the plants	1. Workshop conducted by Keting Chen 2. Discussion & Video shooting 3. See the orangutans
8/3 Sat	1. Plant the tree 2. Visit palm oil tree plantation 3. Visit restoration house	1. Walk into the rainforest 2. Observe and learn the plants 3. Play at the waterfall spot
8/4 Sun	1. Take boat to Pasie Lembang 2. ID check with local authorities	1. Observe the river scene 2. Arrive Suaq Research Station
8/5 Mon	1. Walk into the rainforest 3. Follow orangutans	2. Observe and learn the plants 4. Walk into the swamp forest
8/6 Tue	1. Walk into the rainforest 2. Observe and learn the plants 3. Record the sound	1. Go upstream via boat 2. Observe the birds 3. Discussion & Feedback
8/7 Wed	1. Interview & Discussion 2. CRU Trumon	1. Head for Glambang and Medan
8/8 Thur	1. City visit	2. Go home



The article is the second of a two-part series on our ten-day journey across the rainforests in northern Sumatra.

本文是我們在北蘇門答臘島熱帶雨林為期十天旅程系列的第二部分。

Conserving Sumatra in the face of changing climate

面臨氣候變遷的蘇門答臘環境保育

Text: Nicole Jao,
Translation: Yipei Lee
文: 趙乙庭、翻譯: 李依佩

Research has shown that our rainforests is changing. They are becoming more susceptible to destruction, including man-made and naturally occurring fires. These dense, moist forests are often referred to as the lungs of the Earth because they produce a high percentage of oxygen into the atmosphere and are vital to slowing down global warming.

The Leuser Ecosystem is recognized as one of these tropical rainforests rich in biodiversity and, if disappear, would leave an irreplaceable hole in our natural ecosystem.

It is, unfortunately, diminishing at an alarming rate.

What drew us to the Southeast Asian island of Sumatra was not only to experience the wilderness, but we wanted to understand what we, as scientists, journalists, entrepreneurs, and artists, could do to help raise awareness and preserve the natural habitat.

We were accompanied by a team at HAKA, a non-governmental organization based in Aceh specializes in rainforests and wildlife protection. The organization manages two of the four research outposts in the region—Soraya Research Station and SUAQ Balimbing Research Station—which we stayed at during our ten-day journey in the Leuser Ecosystem, which spans across the provinces of North Sumatra and Aceh.

•

研究顯示我們的雨林正在變化；不論是人為因素或自然起火，都正在變得更容易遭到破壞。這些茂密且濕潤的雨林，因為能產生大氣中的大量氧氣，對於減緩全球變暖至關重要，因此通常被視為地球的肺部。

列由澤生態系統被認為是地球上擁有豐富生物多樣性的熱帶雨林之一，如果消失，它將在我們的自然生態系統中留下無法替代的空缺。

如今，不幸的是，它正在以驚人的速度消逝中。

吸引我們來到東南亞蘇門答臘島嶼的不僅是原野體驗，我們還想了解作為科學家、新聞工作者、企業家和藝術家的我們能做些什麼，來幫助提高大眾對環境的認識並保護珍貴的自然棲息地。

伴隨著我們的是來自亞齊非政府組織 HAKA，該組織專門研究熱帶雨林和保育野生動植物，管理相關地區四個研究站中的其中兩個—索拉亞研究站和蘇瓦克研究站，同時也是我們在這10天旅程中跨越北蘇門答臘省和亞齊省的列由澤生態系統目的地。

Indonesia's disappearing rainforests 印尼消失的雨林

When we cruise down the Alas River en route to SUAQ, at first glance, the shrubs and forests in the protected rainforest reserve appear lush and green, but shortly, signs of human disturbance were difficult to ignore—patches of land exposing bare soil underneath, the water in the river barely knee-high, and fishing boats whizzing by filled with palm oil seeds.

The rangers who have been traveling to the rainforest for several decades noted the intensifying dry seasons, which caused the river's water quality to lower. Many of the wildlife in the forest and in the river, many critically endangered, are losing their natural habitat. The Leuser Ecosystem makes up the largest carbon sink in Asia. Deforestation and land-clearing activities which have increased in recent years not only caused the rising temperature in the region, but air pollution-related diseases, and even deaths.

Initiatives by local conservationists, activists, and indigenous groups are putting in the efforts to slow down the accelerating process. Each of them possesses deep knowledge about the trees and the wild creatures living in the rainforests, and what keeps the ecosystem in balance. By assisting international research study about the local rainforest ecosystem and promoting local conservation activism. They have been doing their part of preserving natural resources in the area, perhaps long before any sense of urgency set in for the rest of us.

One of them is a professor at Banda Aceh who studies local butterfly species, who we nicknamed "Mr. Butterfly" is a thinly built Indonesian man with a signature mustache. He comes to Soraya Research station every few years for his study. He's filled with fun facts about the local insects such as the mud-puddling butterflies that suck essential minerals off damp patches of ground and the bees that build underground nests.

Ibrahim is a research assistant with Leuser Conservation Forum (FKL) that works with resident researchers coming from all over the world in their studies and help collect data. He has spent the past thirty years in the rainforests. He could name out most of the wildlife inhabit in the forest, and the trees and the fungi that grow from the rainforest ground.

For Ibrahim, changes come through learning about the forest and understanding that each living thing helps maintain the fine balance of the ecosystem. Ibrahim believes through research and collaboration, there can be a positive impact on the forest ecosystem. "Raising awareness can be done locally and internationally," said Ibrahim, "having people from other countries that come here to conduct research and projects and share knowledge about what is going on on the ground is important."

當我們沿著阿拉斯河向蘇瓦克研究站航行時，一眼望去，受保護熱帶雨林區中的灌木叢和森林顯得茂密鮮綠，但沒多久之後，人為的跡象漸漸難以忽視：已裸露在外的土壤、幾乎只有膝蓋高的河水，以及載滿剛採收的油棕果實漁船。

幾十年來，一直在雨林間往返的森林保護員注意到干旱季節變化的頻繁導致河流水量下降。森林與河水中的生物，正在喪失其自然棲息地，許多已處於極度瀕危狀態。列由澤生態系統構成了亞洲最大的碳匯。近年來增加的伐林和開墾行徑不僅加速該地區溫度升高、出現與空氣污染有關疾病，甚至導致死亡。

當地環保人士和原住民團體，對熱帶雨林中的植被、野生動植物，及維持生態系統平衡有相當深厚的認知，都在努力倡議減緩惡化過程。此外，他們協助開展當地熱帶雨林生態系統的國際研究、促進保育行動，一直盡力保護該地區自然資源，遠遠比我們所有人感到迫切之前還要早。

當中有位來自班達亞齊 (Banda Aceh) 研究當地蝴蝶物種的教授，我們稱他為“蝴蝶先生”。“蝴蝶先生”是位身材瘦弱的印尼籍男子，留著鬍鬚，說起話來充滿幽默感。每隔幾年，他就會到索拉亞研究站進行觀察研究。這段期間，他告訴我們許多昆蟲常識，例如蝴蝶會從潮濕泥濘土壤中吸取身體所需的礦物質、雨林裡的無針蜂則在樹幹與地下築巢。

亞伯拉罕是列由澤保育論壇 (FKL) 的研究助理，他與來自世界各地的駐地研究員合作進行數據採集。在熱帶雨林裡度過了三十多年光景的他，隨口能列舉出森林中棲息的野生動植物，還有地上生長的菌類名字。

對亞伯拉罕而言，學習和了解森林中有助於維持生態系統良好平衡的物種是他日常工作中相當重要的過程。他認為通過研究與合作，可以衍生出對森林生態系統的正向影響力。亞伯拉罕說：「不論在地村民或國際人士都能提高環境保育認知，讓其他國家的人進行項目研究，分享實地發生的事情也是很重要的。」



Ibrahim, research assistant with Leuser Conservation Forum (FKL), sorting through data of Orangutan food sources he collected for researchers residing at the Soraya Research Station. (Image credit: Nicole Jao)
亞伯拉罕，列由澤保育論壇 (FKL) 研究助理，正在整理研究人員採集的紅毛猩猩食物來源數據 (照片來源：趙乙庭)

Recovery 修復

Efforts to preserve the Leuser Ecosystem has not been without tribulation.

The Soraya Research Station is one of the few things that survived the the conflict in Aceh. It was burned to the ground during the turbulent period of political uprising, so badly damaged that it had to be closed down. It remained unoccupied for 15 years. Local organizations, including FKL, helped rebuilt the research outpost and bring it into operation in 2017. During the turbulent period, the number of international researchers declined sharply.

However, today the conservation efforts have sprung into action. The organization set up "recovery sites" around monitoring outposts. At both Soraya and Suaq, they purchased hectares of land from the owners of palm oil plantations, cut down the trees, and repopulate the area with seedlings of a mix of native trees and fruit trees such as durian, betel nut, and snake fruit trees. The wildlife is expected to come back to the stored land. They do so in collaboration with locals from neighboring villages, who get to keep all the proceeds from the fruits they harvested.

It is something a very positive result yielded from years of conservation efforts that researchers are traveling from Europe, the Americas, and other parts of the world to the Sumatra island to study orangutans and the local ecosystem, said Subhan, camp manager at SUAQ Balimbing Research Station, which was born out of a collaboration between the University of Zürich, Sumatra Orangutan Conservation Project (SOCP), and the Universitas Nasional Jakarta (UNAS). The research station not only works with international organizations and institutions but also the local communities downstream in terms of socialization and education. At present, there is the camp runs an education program at primary schools in the area, which is expected to extend to middle and high school in the near future.

"They [the locals] are more aware of why protecting the forest is important to their communities and of the fact that orangutans exist nearby where they live," according to Subhan, speaking from three years of experience managing the outpost. Through education, they are now taking more active roles in preserving the local rainforest ecosystem. "During the time when the camp didn't exist there was a lot of illegal logging and encroachment activities nearby the river," he added.

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保育列由澤生態系統並非沒有難度。

索拉亞研究站是在亞齊衝突中倖存為數不多的事物之一。在動蕩的政治起義期間，它曾被燒毀，損壞程度嚴重到不得不將其關閉，國際研究人員數量也急劇下降。閒置了15年後，終於在2017年於FKL等當地組織幫助下重拾研究站的運作。

時至今日，保育工作已迅速展開行動了。該組織在監哨所附近設立了“修復站”，另外在索拉亞和蘇瓦克附近，從棕櫚油種植園業主那裡購買數公頃土地，砍伐油棕，選擇原生種樹苗和果樹，像是榴蓮、檳榔、蛇皮果等樹種替代油棕。讓野生動植物在不久將來重返這片土地。此外，他們也與鄰近村莊當地居民合作，讓他們保有原本的採收工作與收入。

蘇瓦克研究站經理舒伯翰說：「我們看到了多年來的保育工作帶來許多積極的成果反饋，紛紛有來自歐洲、美洲和世界各地研究員來到蘇門答臘島研究猩猩和當地的生態系統。」蘇瓦克研究站的相關保育項目也在蘇黎世大學蘇門答臘猩猩保護項目 (SOCP) 和雅加達國立大學 (UNAS) 的合作下誕生。此外，研究站不僅與國際組織和機構合作，也與下游社區進行社會教育方面項目。目前，他們與當地社區小學合開了環境教育計劃，預計不久將擴展到國中 and 高中。

管理研究站基地已有三年經驗的舒伯翰說：「他們（當地人）比任何人更清楚紅毛猩猩就生活在他們的居住地附近這一事實，因此保護森林對整個社區系統是很重要的。」透過教育，他們能在保護當地雨林生態系統中扮演更積極的角色。他又補充：「在沒有教育訓練的時候，河邊有許多非法採伐和侵占行為。」



The stump of an oil palm at a recovery site near the Soraya Research Station. (Image credit: Nicole Jao)
索拉亞研究站附近修復站的油棕樹樁 (照片來源：趙乙庭)



Rainforest ranger. (Image credit: Nicole Jao)
森林保護員 (照片來源：趙乙庭)

More hurdles ahead
未來更多要跨越的障礙

In recent years, some countries in the West have started to wake up to the environmental consequences of the booming palm oil industry in Southeast Asia. The European Commission set an example by passing a measure earlier this year to phase out palm oil-based biofuels by 2030, exploitative practices have also been condemned by the international community.

Expansive national reserves like Leuser Ecosystem, though by law, are protected from poachers, loggers, and criminal activities, enforcement is often lacking and left largely unmonitored by government officials. Lax oversight on curbing palm oil activities in the national park is further complicated by the murky land rights regulations in the country, where indigenous groups often claim ownership to more land than they are entitled.

Local conservation efforts are facing strong headwinds as the Indonesian economy expands and the government puts economic growth above all else. However, high demand for the crop from neighboring countries, India and China, continues to keep the engine of the palm oil industry running. These large markets are big enough to create demand for the palm oil industry to grow unfettered.

Recently, the Chinese government's decision to end palm oil import quotas received support from the Indonesian Palm Oil Association (GAPKI), whose sentiment echoes with the government's.

The country's president, Joko Widodo, who has made it clear the country will continue to prioritize development projects and job creation. Regarding the difficulty for investors to obtain licenses to exploit forest areas, Widodo infamously ordered his environment minister to "close your eyes [and] issue permits as quickly as possible."

Earlier this year, the government advised palm oil companies not to share their plantation data with other parties, including external consultants, NGOs, and multilateral and foreign agencies. The Indonesian president's decision to move its political capital to Kalimantan, Indonesia's section of Borneo and home of orangutans and rainforests, spark fresh concerns.

近年來，一些西方國家已經開始意識到東南亞棕櫚油產業蓬勃發展對環境的影響。歐盟委員會在今年早些時候通過一項措施；2030年前逐步淘汰棕櫚油生物燃料，同時國際組織也譴責此項剝削行徑。

儘管法律能保護像列由澤生態系統這類國家保護區，避免盜獵者、伐木者和犯罪活動入侵，但有關當局仍缺乏強而有力的執法人士監控。再加上，印尼內部模糊不清的土地權和法規，原住民族群經常宣稱他們是土地所有權者往往超過其被賦予責任義務，讓遏制國家保護區內發生的棕櫚油行為監督更加沒有效率且複雜。

隨著印尼將經濟發展和政府將經濟增長視為國家首要任務，當地的保育工作仍面臨巨大阻力。此外，鄰國國家印度和中國對其農作物的迫切需求，使得棕櫚油產業引擎繼續運轉，巨大的市場需求仍然替棕櫚油產業帶來無可避免的供給增長。

近期，中國政府與印尼棕櫚油協會（GAPKI）取得共識，終止棕櫚油進口配額。不過，印尼總統佐科威（Joko Widodo）表示，印尼將繼續以發展項目和創造就業機會為優先。談論到投資者難以取得開發林區許可證問題時，佐科威竟然向環境部長表示：「閉上你的眼睛，儘快簽發許可證。」

甚至在今年早些時候，印尼政府建議棕櫚油公司不要向外國顧問單位、非政府組織、包含外國機構在內提供種植園數據。當印尼總統決定將其政治首都遷至加里曼丹後，婆羅洲印尼地區的紅毛猩猩和熱帶雨林所在地，再次引起了社會的關注。

Conservation through art 藝術作為保育方式之一

It has become clear to many that climate change is one of the biggest challenges our generation has to face. And more than ever, there is a heightened awareness about rainforest protection, partly because of the Amazon fires in recent months that captured the world's attention. It is important that not only that local activism and grassroots initiatives to roll into action, but that everyone to take part in it.

Learning and understanding nature is not purely a scientific process but also an artistic one. Whether it through observing the visually rich patterns, shapes, and colors in a rainforest, or appreciating the rhythms and melodies made in the natural world, or simply let ourselves be creatively inspired by the unruliness of the wild.

Our journey to Sumatra, organized by Suaveart, is part of a larger project that aims to inspire and encourage creators and artists like us who care about our natural habitat and hope to raise environmental awareness.

對許多人來說，氣候變遷已成為我們這代人必需面對的最大挑戰之一。而且，與以往相比，人們對雨林保護的意識比過往任何時候都高，部分原因是近幾個月的亞馬遜大火引起了全球意識高漲。保育環境最重要的，不單是靠地方運動人士和基層倡議付諸行動，而是你我每個人都應該參與成為其中一份子。

學習和理解自然不僅是個科學過程，也是具藝術性的過程；無論是通過觀察熱帶雨林中豐富的視覺圖案、形狀和顏色，欣賞自然世界中的節奏和旋律，或僅僅是讓我們從原野的野性中獲得靈感。

由細着藝術組織的蘇門答臘之旅的概念驗證過程中，在於激勵和鼓勵像我們這樣的創作者和藝術家關心我們的自然棲息地同時提高環境意識。



Chatter-filled nights at SUAQ camp. (Image credit: Nicole Jao)
蘇瓦克研究站期間，每晚都充滿了討論和交流（照片來源：趙乙庭）



An art workshop at Soraya Research Station, where we compare different shapes, colors, and texture of fallen leaves, seeds, and branches collected from the forest floor. (Image credit: Yipei Lee)

在索拉亞研究站的藝術工作坊，我們比較從雨林中採集的落葉、種子和樹枝中不同的形狀、顏色和質地。(照片來源：李依佩)

**THE MARK
IN THE FOREST**
森林標記

Photo Credit: Chang Xiao Ling



Featured artist work

推薦藝術家作品

Bagus Pandega
Kei IMAZU

巴格斯·潘得佳
今津景



Artificial green by nature green 來自棕櫚樹中的仿真綠

Bagus Pandega and Kei Imazu's collaborative work is an attempt to present a phenomenon of the global climate change. In their research, they have found that one of the factors of the current climate change is deforestation and mass logging in Indonesia. The data mentions that Sumatra and Kalimantan forests are among the 11 regions of the world that contribute to more than 80% of global deforestation until 2030.

On a large scale, deforestation threatens the lives of thousands of species, potentially cause erosion and floods, reduce water quality, and destabilize the global climate. During the period of 2011-2016, researchers found that the national palm oil industry resulted in the deforestation of 2.08 million hectares or 23% of the national forest destruction. While also taking place in Sumatra and Papua, this kind of deforestation is found most frequently in Kalimantan.

Pandega and Imazu's installation is equipped with a painting instrument of which movement and operation are triggered by the condition of palm tree presented in the exhibition room. A modular electronic device reads the organic electric current in the plants and processes it into a signal that regulates the movement of the machine. Additionally, a video displays a factual phenomenon surrounding Indonesian forest, and orangutan have lost their natural habitat.

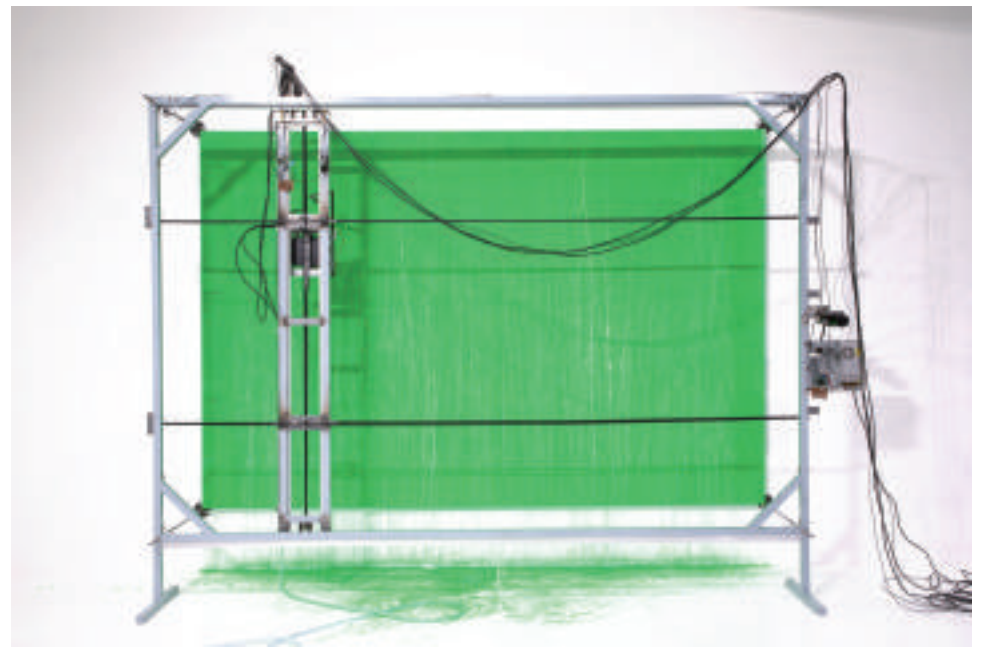
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現居印尼萬隆的巴格斯·潘得佳和今津景藝術家雙人組試圖在作品中展現全球氣候變化現象。在他們的研究中，發現當前氣候變化因素之一是來自印尼的森林破壞和大規模開墾。數據顯示到2030年前，全球森林砍伐80%以上的11個地區中，蘇門答臘和加里曼丹的熱帶雨林將榜上有名。

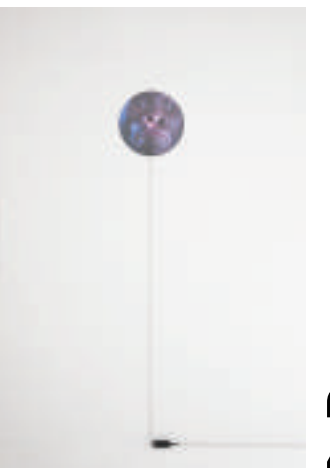
大規模森林砍伐威脅著數以千計的物種生命，甚至可能造成土壤侵蝕和洪水，降低水質，破壞全球氣候的穩定。在2011年至2016年期間，研究人員發現，印尼本地棕櫚油產業導致了208萬公頃的森林消逝，佔全國森林破壞面積的23%。儘管在蘇門答臘和巴布亞也有發生，但森林砍伐在加里曼丹最為嚴重。

巴格斯·潘得佳和今津景的裝置作品也包含了一組繪畫機器，畫筆的運動是由同一個展示空間中的棕櫚樹內部狀態所觸發的。模組化電子裝置可以讀取棕櫚樹的有機電流，並将它處理為控制機器繪畫的訊號。此外，該作品還包含了一段錄像，顯示了印尼熱帶雨林常見的事實－紅毛猩猩失去了自然棲息地。

Photo credit: Art Jog



Title: Artificial green by nature green
Dimension: Variable Dimensions
Year: 2019



Featured artist work

推薦藝術家作品

Philippe Echaroux

菲利普·埃沙魯

World First Street Art in the Rainforest 全球首見熱帶雨林中的街頭藝術

Back to 2016, in a gesture to draw attention to the massive deforestation ravaging the Amazon rainforest, French photographer and street artist Philippe Echaroux projected the faces of indigenous Brazilians onto the forest's trees. The projected images demonstrate the deep connection between the rainforest and its inhabitants, acknowledging the need for the preservation of their home and resources.

The photographs focus on the Suruí tribe of Brazil which is led by Chief Almir Surui Narayamoga and was asked by the Brazilian government to help replant their section of the rainforest in order to ensure and protect its longevity. Echaroux was invited by Chief Narayamoga to bring attention to the issue, which he highlighted through his projections.

While staying with the indigenous Suruí tribe in Brazil, Echaroux photographed the local people and projected their images up onto the rainforest canopy at night creating staggeringly beautiful images in the trees. The idea behind the project was highlighting the deep connection between the rainforest and the people that live there. Their existence relies on the forest, so it stresses the importance of preserving the region.

Enlarged and carefully projected over the trees of the forest to create what appears as a seamless composition, the pensive faces of the Surui, shot over the course of a week by Echaroux, beautifully display the harmonious relationship they enjoy with their habitat. The work is a confronting visual, one that forces the viewer to consider the Amazon as more than just a site of valuable resources. Part of a conservation campaign envisioned by the photographer and named Street Art 2.0, *'The Crying Forest'* is likely just the beginning of an ongoing artistic commentary on humanity's' relationship with the earth.

"When I got in contact with the Surui tribe I promised them one thing," Echaroux explains. "I wanted to illustrate that when we cut down a tree it's like putting a man down, when we see the connection between these people and the forest, this really is the evidence."

●

回到2016年，為了引起人們關注在亞馬遜雨林肆虐的大規模砍伐，法國攝影師暨街頭藝術家菲利普·埃沙魯將巴西蘇芮部落族人臉孔投射到森林樹冠上，展示雨林與其居民之間極深度的連結，呼籲人們保護他們的家園和天然資源。

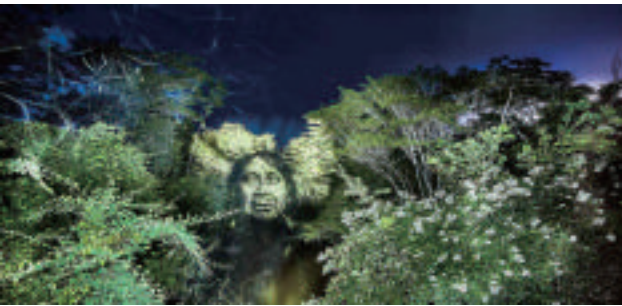
這些肖像照片聚焦於酋長阿爾米爾領導的巴西蘇芮部落，該部落應巴西政府要求，幫忙復育熱帶雨林區，以確保雨林受到保護並延長其壽命。

菲利普在原住民部落駐村期間，替族人拍照，並在晚上將肖像投射到大片雨林上，創造了驚人的美麗景觀。該計畫描敘了當地族人的存續仰賴於森林，藉此突顯出保護該地區的重要性。

蘇芮族人的肖像照片經過放大投射後，無違和地融入森林景觀；思索的神情帶出了他們與棲息地間的相處。作品《哭泣的森林》是一明顯對立的視覺創作，迫使觀眾直視亞馬遜，而非其蘊含的資源價值。菲利普甚至視它為街頭藝術2.0—森林保育運動的一部分，作品《哭泣的森林》只是透過藝術手段評論人類與地球關係的開端。

「當我與蘇芮族人接觸時，我向他們承諾了一件事。」菲利普說。「我想敘述的是，當我們砍伐一棵樹時，就像在擊倒一個人；我們觀察到這些人與森林之間的情感即是最好證明。」

Resource: Philippe Echaroux, PetaPixel, Design Indaba, Colossal



Title: The Crying Forest

Dimension: Variable Dimensions

Year: 2016



本冊子系細着藝術為計畫《未來種子》所印行

Seeding Future: Rainforest Research Project

未來種子：熱帶雨林調查研究計畫

2019年7月31日－2019年8月9日

Special Thanks 特別感謝

HAKA 哈卡環境保育機構

Farwiza Farhan

Irham Hudaya Yunardi

Artist 藝術家

Aliansyah Caniago

Soraya Research Station 索拉亞研究站

Dani

Ibrahim Chane

Masykur

Hasballah

Muhammad Nawi

Kartini

Marie Padberg

Feri Sandra S.

Fitrianti

Sabarudin

Nissa Mavlita

Suaq Research Station 蘇瓦克研究站

Subhan

Pazakeir

Misrijar

Rustam

Saidi

Luz

Tri

Miftahul

Team of Seeding Future 計畫團隊

Project initiator 計畫發起人

Yipei LEE 李依佩、Farwiza Farhan、Aliansyah Caniago

Project coordinator 計畫統籌

Chen Pei Jie 陳佩潔、Chang Hsiao Ling 張筱翎

Workshop 工作坊

Chen Keting 陳科廷

Writor 文章作者

Jao I-Ting 趙乙庭

Video 錄像

Wang Yu Ying 王鈺潒

Visual Design 視覺設計

Song Xuewen 宋學文

Publisher 出版人

Yipei LEE 李依佩

Project supported by 特別致謝

Department of Cultural Affairs, Taipei City Government 臺北市政府文化局

Bamboo Curtain Studio 竹圍工作室

NanHai Studio 南海藝工作室

Collectors 採集人共作室

Bagus Pandega X Kei IMAZU 巴格斯·潘得佳 X 今津景

Phillippe Echaroux 菲利普·埃沙魯