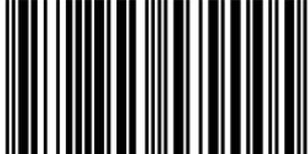


ARA

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ARA

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Plantation

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RAINFOREST SOUNDS

SCAN HERE!



EDITOR'S NOTE

Welcome to Volume 2 of ARA Magazine!

ARA magazine is all about wildlife conservation in Borneo. It updates the reader on the great conservation work being carried out by grass root groups in Sabah, Sarawak, Brunei and Kalimantan. This magazine is in English and Malay and can be downloaded by all for free.

What does ARA mean? ARA means fig or ficus (scientific name). A fruiting ficus tree in the rainforest is usually the epicenter of a wildlife feeding frenzy. For this edition, we have chosen the Wreathed Hornbill for the front cover, one of the biggest hornbills on Borneo. It is also called the Mountain Hornbill in the local language.

There are several new write ups and organisations than the previous edition especially from Sabah and Kalimantan. As the covid-19 restrictions ease and borders reopen, there are more conservation programs taking place especially since the pandemic slowed down things. Please enjoy this magazine and share the message about all the great work being carried out by conservation groups on Borneo!



**EDITOR OF ARA MAGAZINE,
SHAVEZ CHEEMA**

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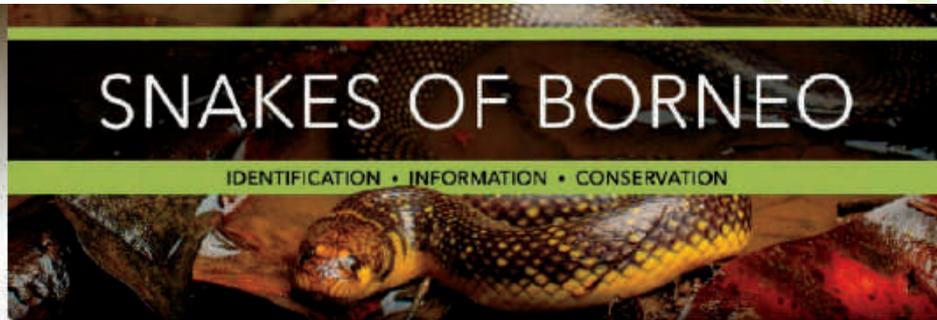
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USEFUL FACEBOOK GROUPS



Snakes of Borneo



Borneo Bird Club



Butterflies of Borneo

Public group · 2.1K members

Join Group



Borneo Mammal Club



SABAH

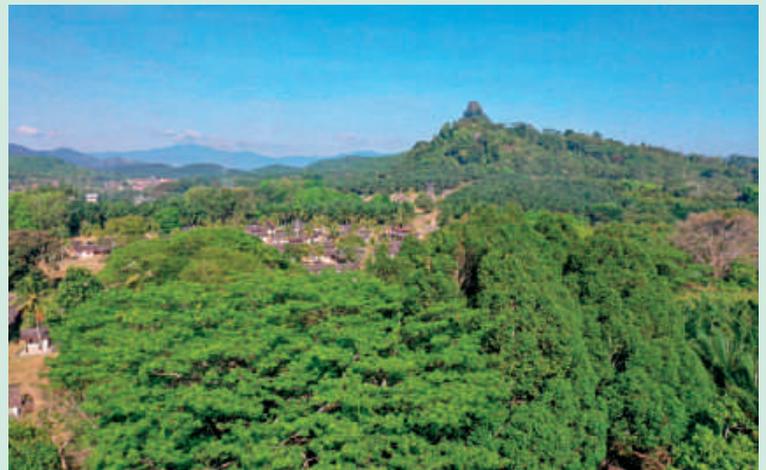
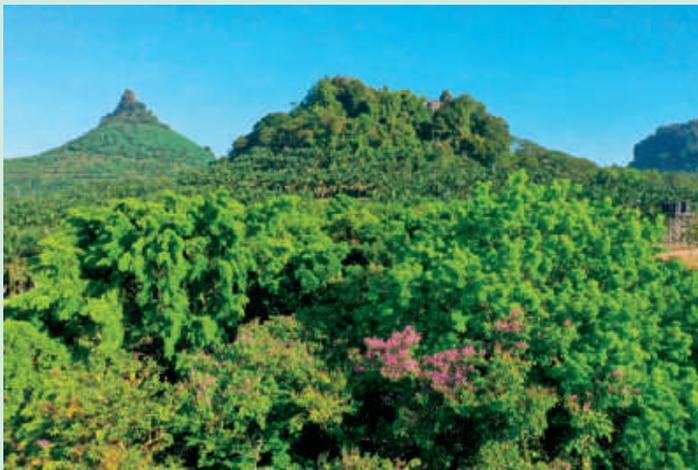
RESTORATION PROJECT AT KAMUNING ESTATE A COLLABORATION BETWEEN YAYASAN SIME DARBY, SIME DARBY PLANTATION AND FOREST RESEARCH INSTITUTE MALAYSIA

BY SIME DARBY PLANTATION BERHAD



Since 2008, Sime Darby Plantation (SDP) has been spearheading the Sime Darby Plant-A-Tree Programme to aimed at preserving endangered, rare, and threatened (ERT) species of rainforest trees. With an aspiration to plant 1 million indigenous forest trees within designated and suitable areas in SDP's estates, the Plant-A-Tree Program was expanded to Kamuning Estate in 2019. The estate, which is located in Sungai Siput, Perak, received a financial sponsorship amounting to RM2 million from Yayasan Sime Darby (YSD) for three years from 2019 until 2021.

Kamuning Estate was selected as a tree planting site due to the rice biodiversity of Lion Hill. The surrounding communities hike up the hill to get magnificent views of Sungai Siput. In addition, the Kledang Saiong Permanent Forest Reserve, a hill dipterocarp forest that was gazetted in 1952, is also adjacent to the Kamuning Estate.



More than just a tree-planting project, the Kamuning Plant-A-Tree project was mooted with the intention of improving the natural habitats that are located within the estate as well as increasing the value of the resources that are associated with these habitats for years to come. The project is also designed to establish 'steppingstones' in the estate, replicating the Central Forest Spine (CFS) secondary linkages approach. The project is also intended to boost the biodiversity in our plantation by utilising regions that are unsuitable for oil palm planting. This also enables it to become a model for a sustainable plantation that supports the National Policy on Biodiversity 2016–2025.





To date, we have planted close to 1.9 million trees in areas within and surrounding our operations. 75,000 saplings have been successfully planted on 95 hectares of land under this project. In total, 65 species were planted including ERT species. Despite the high occurrence of disturbances from domestic cattle in the estate, the survival rate is 71%, an acceptable rate, and we continue to geotag these trees.



HORNIBILLS AND FRUIT TREES OF SUKAU



Moving to Sukau as a botanist was indeed a major change for me. As I join Gaia in their fight to conserve these majestic creatures, I discovered the importance of botany in hornbill conservation.

There are 8 species of hornbills found along the Kinabatangan River, namely the Rhinoceros Hornbill, Helmeted Hornbill, Wrinkled Hornbill, Wreathed Hornbill, White-crowned Hornbill, Black Hornbill, Bushy-crested Hornbill, and Oriental Pied Hornbill.

Although most Asian hornbills are omnivorous, fruits make up most of their diet. Figs are recognized for their overwhelming importance in the Asian hornbill diet, where species such as the Helmeted Hornbill rely almost entirely on them as their food source.

One effort led by our team is conducting river monitoring, from Sukau village up till Abai and Bilit villages. On special occasions that we encounter hornbills feeding on riverside trees, we document the food preference of these hornbills and collect plant samples if needed. This is in line with our goal to create a list of the hornbills' preferred food plant.

Our latest research includes studying the role of *Cananga odorata*, or commonly known as Ylang-ylang, as a food source for hornbills. Unlike figs, Ylang-ylang fruits are lipid rich. Based on previous studies, hornbill dependence on lipid rich fruits was found to differ between the breeding and non-breeding season. It would be interesting to see how changes in these seasons affect the dependency of hornbills on Ylang-ylang fruits.

The first step in conducting this study is identifying these trees at the study site by observing their leaves, flowers, and fruits. Ylang-ylang has a distinctive aroma, which makes them quite easy to identify. Once we have found the trees, we can start observing hornbills feeding on the fruits. We hope that with this study we can obtain valuable insight on Asian hornbill feeding habits.



BRINGING BACK OUR RARE ANIMALS (BORA)



BORNEO PALM OIL TOWN SUPPORTS ORANGUTANS IN AN UNUSUAL WAY

Lahad Datu district in Sabah is world-famous for its Danum Valley Conservation Area and Tabin Wildlife Reserve. Lahad Datu town is also in the middle of one of Malaysia's major oil palm growing regions. Research in Sabah over the past decade has shown that orangutans can live and reproduce in a mixed oil palm and forest landscape, if they are given safe passage when they travel outside the forest, as well as adequate natural food. Lahad Datu celebrated World Environment Day (5 June) 2022 by donating orangutan food plants that were growing in the wrong places - on the town's buildings and in the drains. The plants are all members of the fig family, known as Ficus, of which there are over 150 wild species in Borneo, and whose fruits and leaves are a major part of the diet of wild orangutans.

103 people from 13 agencies and organizations turned up and were involved in rescuing 657 Ficus plants that were growing in the town. The idea and logistics came from non-governmental organization, BORA ('bringing back our rare animals'), which took the fig plants to Tabin for recovery and preparation for onward transfer to conservation lands in Sawit Kinabalu oil palm estates. Dr. Mohammad Ayub Yakub, District Officer of Lahad Datu, led the 'gotong-royong' event, where the Fire and Rescue Department, amongst others, made use of their skills.



#PLANT4TAWAU

BY 1StopBorneo Wildlife



Plant a tree with us today.
Together we can save Borneo's Wildlife.



#Plant4Tawau is a visionary, long-term project that aims to reconnect fragmented areas of rainforest in Sabah; some of these are identified in Figure 1, which represents their locations in the district of Tawau in Southeastern Sabah. For example, reconnections are planned between Tawau Hills Park, an area of 29,000 hectares, with the much smaller areas of Bukit Gemok and Tajong Forest. It is a forest rehabilitation project between Sime Darby Plantation Berhad and 1StopBorneo Wildlife.

The Plant4Tawau project was established for multiple reasons:

- To educate visitors on the best practices for restoring damaged forest back to the original diversity of Borneo's native forests.
- To provide wild food for the local wildlife at Tawau Hills especially hornbills, gibbons and langurs, allowing visitors to watch these animals at close quarters.
- To provide a living gene bank of Borneo figs freely available to both Malaysian and overseas researchers into fig ecology, taxonomy and biodiversity.
- To provide planting material for the much larger adjacent habitat enhancement project described here and other forest restoration projects in Borneo.
- To carry out field experiments on how best to plant strangling figs on oil palms to enhance the edge of oil palm estates for wildlife habitat throughout Borneo.
- Our hope is that in 50 years' time the Tawau Hills Fig Garden will provide a diverse wildlife-rich forest garden that will attract students, researchers and tourists from around the world.
- Finally, we hope that this living example of what is possible will stimulate the creation of hundreds of similar projects throughout Borneo. We can provide free fig seeds and fig planting advice to anyone interested in similar projects and forest restoration.

Through The Lens



Adi & Mala

The Underwater Beauty Saloon (Cleaner Stations)



Flashing white antennae and elaborate dance routines advertise the opening of the underwater beauty salon. On hand to serve customers are the cleaner wrasse *Labroides dimidiatus* and their professional colleagues the cleaner shrimps *Stenopus hispidus*, *Lysmata amboinensis*, *Urocardidella antonbruunii* and *Periclimenes holthuisi*. No discrimination is their motto; may you be big or small, suffering from skin rash or dental problems, skinny or fat, these beauticians will address the problem promptly. Even divers are welcome.

These underwater beauty salons, known as cleaner stations, are so important that the whole coral reef community would die without it. As noted by Conrad Limbaugh in 1961, two isolated reefs in the Bahamas were denuded of fish within 14 days when he experimentally caught all known cleaners. Once the fish left, algae soon smothered the corals, and it took years to completely recover.

Fishes and other marine life have scales and appendages that provide parasites with protection while they make life for the host an itchy affair. Unlike humans, fish do not have fingers to scratch with or medicaments for rashes and skin infections. Bottom dwellers scrape against sand or rock, often at the risk of disturbing an aggressive neighbor. Open-water fish resort to rubbing against each other or patches of flotsam and even leaping out of the water. Thus, the cleaner stations with its services that range from parasite picking, dead skin removal, gill vacuuming, teeth whitening, wound treatment and general grooming are so important in maintaining a healthy reef.

Journey with Dee Dee



Contributor's Name: Deirdre Julius Kulip
Title: My Soul Story – A Rainforestship Journey

When I embraced myself with nature, the rainforest and the wildlife in Sabah, I fell in love so hard, so deep, and so true in a way I have never experienced before. I graduated with a Diploma in Tourism Management at University College Sabah Foundation in 2019, and developed a platform on the social media (Facebook) called 'Journey with Dee Dee', a personal brand that highlights my journey not only as one of the Licensed Tourist Guides in Sabah but also as a person who searches for the meaning of life through nature's coexistence and inspirations.

After successfully doing virtual tree planting (A Tile for A Tree – Tree Adoption Program) and planting more than 100 fig trees in which I collaborated with 1StopBorneo Wildlife (NGO), I am hungry for more and always thinking of what else I can do with my pair of hands.

As I believe that knowledge and education should not discriminate, in 2021, I started my move with my partner, Mohammad Azman bin Azuan Shah, and approached a small underprivileged community focusing on the young generation at Kg. Botol, Mile 1 ½, Sandakan, Sabah, and conducted wildlife sharing and interactive sessions, educational trips and camps, rainforest and river clean-ups, and many more to come. As most of them live closer to nature; near the rainforest and ocean, it will be a great opportunity to reach them at any corner in Sabah because everyone deserves to learn and experience what Sabah has to offer!



The Babi Hutan Project - A citizen science project to monitor the African swine fever outbreak in Borneo

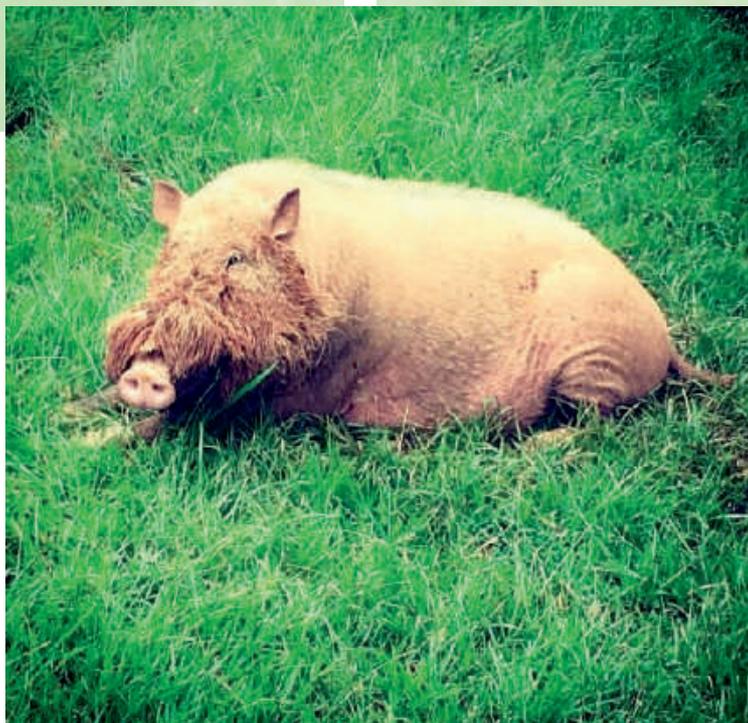
By Sui Peng Heon & Olivia Daniel

Scan here!



A joint initiative by Imperial College London's Stability of Altered Forest Ecosystems Project (SAFE), the Department of Veterinary Services of Sabah and Sabah Wildlife Department.

The Babi Hutan Project was first set up in early March 2021, when our research team at the SAFE Project (a long term ecological research station) first learnt about reports of dead Bearded Pigs (*Sus barbatus*) in Sabah. Which we soon discovered were caused by the deadly African swine fever. At that time, Malaysia was still under lockdown which made it difficult to do any camera trapping or field surveys to grasp the extent of the disease outbreak. We therefore established a citizen science platform, with the aim of reaching out to the general public to report sightings of live or dead pigs. We then relayed the relevant information to authorities for further investigation and action.



Rainbow, formerly a resident Bearded Pig at Maliau Conservation Field Centre.

We are still accepting reports on Bearded Pig sightings, alive or dead, from all over Borneo. Please do contact us if you see any pigs! This information will provide us with an insight on how the Bearded Pigs are doing, if any local populations survived the outbreak and if populations are recovering. This is a critical period for the species recovery and it is extremely important that these survivors aren't hunted out. In anticipation of the upcoming rice harvest festival: Ka'amatan and Gawai festival, we encourage people to refrain from hunting or consuming wild boar meat, to allow the Bearded Pig population to recover.

Scan here!



WE NEED YOUR HELP!
HAVE YOU SEEN A BABI HUTAN RECENTLY?



Yes !! / No, not in a long time

Babi Hutan Project Borneo is monitoring the African swine fever outbreak in the Bornean Bearded Pigs. Any information on pig **presence or absence** will help us understand the current situation.

DO LET US KNOW:
Call/Whatsapp : +6011-27080806/ +6088-213 502
Website: www.babihutan.com
Facebook: The Babi Hutan Project, Borneo

A collaboration between Imperial College of London, Department of Veterinary Services & Sabah Wildlife Department.

A poster to raise awareness of ASF and to report sightings

Showcasing the Night-flying Hawks of Sabah

Text & photos by Arthur Y.C. Chung

The night-flying hawks here refer to the predominantly nocturnal hawk moths which belong to the Sphingidae family of the Order Lepidoptera. Some fly by day while a few are active during the crepuscular period. Known also as Sphinx Moths, they have a hawk-like or jet-like aerodynamic shape that enables them to fly efficiently. They are generally medium to large-sized moths (with wingspan between 5 to 15 cm) compared to other moths. Their stout-bodied caterpillar has a 'horn' at the back which is a distinctive feature of this moth family. Some are ecologically important as pollinators of rainforest plants and a source of food for other wildlife, such as insectivorous birds, reptiles and amphibians. The larvae are pests of various tropical plants, such as *Amplypterus panopus* larvae that feed on mango foliage while *Daphnusa ocellaris* larvae attack durian leaves. Larvae of the smaller hawk moth, *Cypa decolor*, feed on dipterocarp flowers high up in the canopy. *Daphnis hypothous* larvae are serious defoliators of Laran (*Neolamarckia cadamba*), which is a native forest plantation tree in Sabah.

On par with dragonflies, hawk moths are the fastest flying insects (50 km/h) with the ability to fly backwards and upside down. This group of moths also has the longest tongue among insects to get nectar from flowers. The proboscis (feeding organ) of some species measures up to 32 cm in length.

There are some 100 hawk moth species in Borneo, and many of them are found in Sabah, Malaysian Borneo. Among the very large hawk moths in Sabah are *Meganoton analis*, *Elibia dolichus* and *Ambulyx pryeri*, with wingspan between 12 to 15 cm. The species that are often encountered in the suburban areas of Sabah are Oleander Hawk Moth (*Daphnis nerii*) and Jade Hawk Moth (*Daphnis hypothous*), in which the larvae are often sighted feeding on various ornamental plants. These two species are also among the most beautiful hawk moths in Sabah because of their army-like pattern on their wings and body. Another strikingly beautiful species is the Pink and Green Hawk Moth (*Callambulyx rubricosa*), especially when the moth reveals its brilliantly pink-coloured hindwings. The Death's Head Hawk Moth (*Acherontia lachesis*) is an interesting species because of a skull symbol on the thorax which looks 'frightening'. The temperate species of this genus was featured in the famous 1991 horror movie, 'Silence of the Lambs'. Highlighted in this pictorial article are just some of the many hawk moths found in the Land Below the Wind.

Reference

Holloway, J.D. (1998). The moths of Borneo (part 3): superfamily Bombycoidea: families Lasiocampidae, Eupterotidae, Bombycidae, Brahmaeidae, Saturniidae, Sphingidae. Southdene Sdn. Bhd., Kuala Lumpur. 199 pp.

Showcasing the Night-flying Hawks of Sabah

Text & photos by Arthur Y.C. Chung



The larva of the Jade Hawk Moth, *Daphnis hypothous*. Take note of the 'horn' at the back.



The larva of the Death's Head Hawk Moth, *Acherontia lachesis*.



Grey Double-bristled Hawk Moth, *Meganoton analis*.



Large Banded Hawk Moth, *Elibia dolichus*.



Pryer's Gliding Hawk Moth, *Ambulyx pryeri*.



Grey Gliding Hawk Moth, *Ambulyx canescens*.



Army Green Hawk Moth, *Daphnis nerii*.



Jade Hawk Moth, *Daphnis hypothous*.

Showcasing the Night-flying Hawks of Sabah

Text & photos by Arthur Y.C. Chung



Large Pink & Green Hawk Moth, *Callambulyx rubricosa*.



Death's Head Hawk Moth, *Acherontia lachesis*.



Green Pergesa Hawk Moth, *Pergesa acteus*.



Spotted Green Hawk Moth, *Cechenena helops*.



Mango Hawk Moth, *Amplypterus panopus*.



Dull Double-bristled Hawk Moth, *Meganoton nyctiphanes*.



Mottled Green Hawk Moth, *Cechenena aegrota*.



Striped Green Hawk Moth, *Cechenena lineosa*.

Showcasing the Night-flying Hawks of Sabah

Text & photos by Arthur Y.C. Chung



Orange-sided Hunter Hawk Moth, *Theretra nessus*.



Green Eye Spot Hawk Moth, *Daphnusa ocellaris*.

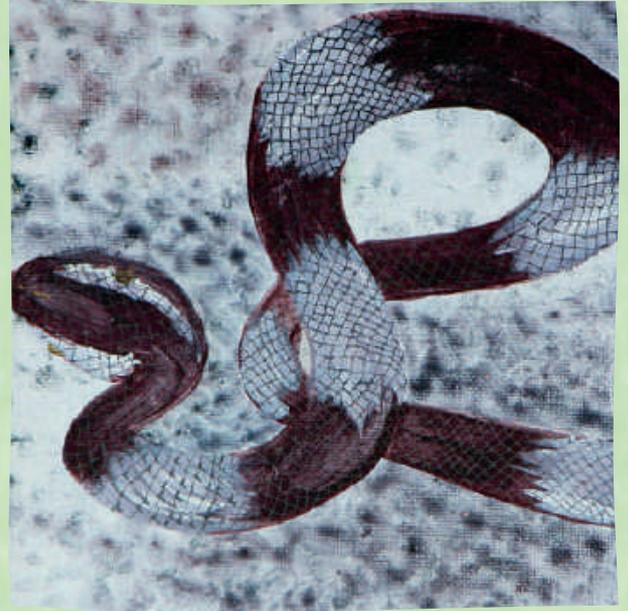


Common Cypa Hawk Moth, *Cypa decolor*.



Dull Forest Hawk Moth, *Acosmeryx shervillii*.

ELVIE ARTIST



A week of shinrin-yoku at Tawau Hills park was simply a magical experience. From the wake up calls of the Rhinoceros Hornbills to the wonderful and gratifying morning walks through the Dipterocarp forest complete with komorebi as the dark-colored expressions of the Red Leaf monkeys swinging from tree to tree.

It often rains here in the afternoon but by dusk, the rains stops to present a gradient of red and orange painted sky. Over the clouds, the majestic Rhinoceros Hornbills flies over the landscape.

The night walks gets even more interesting as I was fortunate to catch a glimpse of the Jade Tree Frogs, a rare species that only climbs down from the trees after a heavy rain. A nocturnal Brown Wolf Snake could also be seen slithering on the forest floor while stick insects being completely still, blending in with the forest fractals and Leaf-nosed bats darting through the night.

Nature walks truly revitalises the soul and also improves my creativity in my artworks. Even more exciting is implementing nature art stamping process to create interesting patterns and textures. Completing my masterpieces in this illustrious forest was fulfilling!

I hope you love these artworks- sincerely from me; a Sabahan born multidisciplinary artist, currently in search for a beautiful life, through my illustrative journal and deep appreciation in Borneo biodiversity. - Mae Bayu

Note:
Shinrin-yoku (Japanese) :Forest bathing

Komorebi (Japanese) :Sunshine filtering through the trees

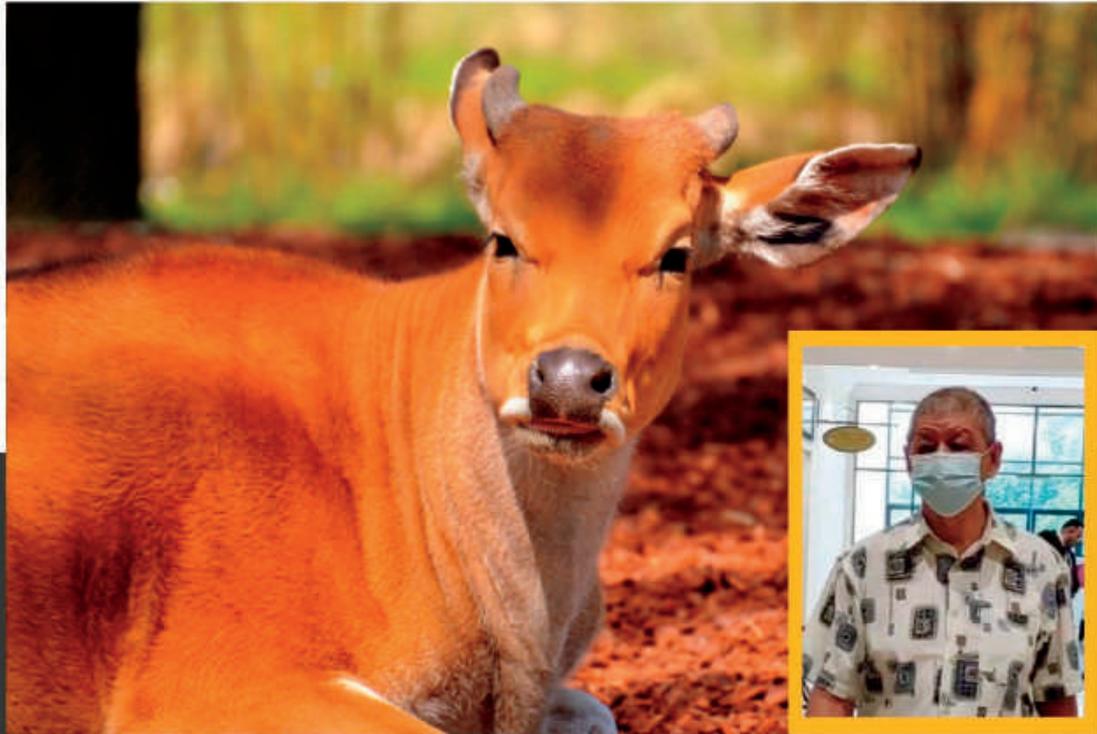
ABIGAIL TSEN



Having lived in Tawau Hills Park for three months, I have had the opportunity to witness firsthand the richness of the wildlife in Sabah. Each day in the rainforest is never the same, adding to the excitement whenever I embark on my daily walks. One of the most remarkable things I have learnt during my time in Tawau Hills is the importance of fig trees, which is a food source for an abundance of wildlife in the forest. This illustration is a simple depiction of the value of a fig tree. On the top right is the critically endangered Helmeted Hornbill, in the midst of swallowing a fig. Moving down is the adorable Red Leaf Monkey - the icon of Tawau Hills Park, and on its left is the Paradise Tree Snake resting on the end of the branch. A small bee hive hangs from the bottommost branch. Perched on the tree hole is a Wreathed Hornbill, looking for a place to call home. On the bottom right branch is a pair of Bushy-crested Hornbills and on top of them is the fastest primates of the canopy, a mother and baby Gibbon having a snack.

TRAFFIC

HEFTY FINE AND JAIL TIME FOR ELDERLY MAN CAUGHT WITH PROTECTED WILDLIFE MEAT



PHOTOS: PIXABAY.COM, (INSET) NST.COM.MY

An elderly man in Sabah, Malaysia was sentenced to a year in jail and fined a total of RM206,000 (USD48,787) for illegal possession of protected wildlife. He faced an additional seven months in prison if he failed to pay the fines. He was found guilty of illegal possession of 36.10kg of Banteng meat, five carcasses of large flying foxes and 4.8kg of Sambar deer meat. The judge, Elsie Primus held that the offence involving a Banteng was a serious one given the animal was a fully-protected species.

Banteng is listed as Endangered on the IUCN Red List and the species is threatened by poaching and habitat loss in Sabah. It is frequently hunted for its meat and also its head, which is kept as a trophy.

AN OVERVIEW OF MAMMALS AND BIRDS IN AN OIL PALM PLANTATION NEAR LAHAD DATU

Joe Pan,
See Hoy Chan Plantations (Sabah) Sdn. Bhd.

Most people think oil palm plantations are devoid of wildlife aside from the occasional wild boar, snakes, rodents, and insect pests especially those pesky mosquitoes!

However, as a nature lover and planter for over 40 years, I have experienced quite a lot of wildlife can still be found in oil palm plantations. The biodiversity of a plantation greatly depends on its management, for example incorrect use of toxic chemicals and management of pollution, could render it an unsuitable habitat for wildlife.

With the sustainable palm oil certification (RSPO and MSPO) enforced by the industry nowadays there is also an increase in high biodiversity areas such as unplanted hill and riparian reserves in plantations as opposed to the old-school “production from every inch of land” policy! Plantations in Borneo needs to be more sustainable to coexist better with the native wildlife.

These are some of the common mammal and bird sightings from the plantation I work here in Ladang Hangsam, Lahad Datu.

Mammals

Big mammals are rarer being the first to disappear after land clearing but there are still many other mammals around. The commonly encountered are civets and leopard cats that prey on the many rodents thriving in the fields. Macaques, otters, bats, and the Sunda Stink Badgers are regulars and happily living there. There has also been recent sighting of pangolins.

Birds

The pride of our “high biodiversity value area” is a pond in the center of our plantation. Soon after construction of this small reservoir, flocks of wandering whistling ducks moved in, followed by nesting little grebes which regularly produce chicks. Our bird list includes pied hornbill, woodpecker, black shouldered kite, serpent eagle, hawk eagles, owls, sunbirds, munias, tailorbirds, kingfishers, shrikes, coucals, cuckoos, and a recent arrival – baya weavers!

Our star bird is the Storm’s Stork!

- 1** Storm's Stork *Ciconia stormi* (Upih Rimba)
This endangered species of stork only has less than 500 individuals left in the world but are still often seen feeding on the ground here in the oil palm fields or doing aerial display in the sky.
- 2** Island Palm Civet *Paradoxurus hermaphroditus* (Musang Pulut)
This omnivorous mammal feeds on palm fruits and also a predator of rodents and small birds in the plantation.
- 3** Cattle Egrets *Bubulcus ibis* (Bangau Kendi)
These birds arrive in large numbers during the migration season and are often seen accompanying machinery working in the fields.
- 4** Little Grebe *Tachybaptus ruficollis* (Tetimbul Kecil)
This species is a permanent nesting resident in the plantation's water reservoir.
- 5** Bornean Leopard Cat *Prionailurus javanensis borneoensis* (Kucing Batu Borneo)
Common nocturnal predator of rodents in the plantation.



Tanjung Aru Marine Ecosystem (TAME) Center

Michael Yap

Marine facilitator and event coordinator of TAME Center

Founder of Seagrass Guardians



Tanjung Aru Marine Ecosystem Center was established by EcoCastle Sdn Bhd, which was founded by Japson Wong, a Sabahan Upcycling Artist. This center aimed to be a hub and platform for various government agencies, NGOs, Social Enterprises, and corporates to work together for the betterment of our natural environment and society. The most iconic landmark at TAME is the glass bottles wall, illustrating seagrass and seaweed.



Event of World Ocean Month and Shark and Ray Initiative Roadshow during June 2022



Glass bottles wall made from approximately 24,840 of glass bottles, the biggest of its kind in Malaysia.

5 Main pillars of TAME Center

1. Marine Environment, which focus on wetlands, seagrass, seaweed and coral reef ecosystems in Sabah, as Sabah is strategically located within the Coral Triangle, the epicenter of biodiversity on the planet.
2. Wildlife included flora and fauna in Sabah Forest, endangered species conservation and wildlife sustainable tourism.
3. Heritage of local communities, from food, folklore, games, dances, music and many more.
4. Recycling and upcycling, aimed to educate general public importance of recycling and upcycling, as well promoting earth-ship program in Sabah
5. Green tech with a focus in renewable energy, sustainable biogas, urban farming etc.

Activities in TAME Center

There will be different themes every month, for more information please follow our FB page at <http://www.facebook/TAMECenter> for more information. TAME Center opens for any collaboration, events, even learning trip from schools, any inquiries drop us a message in the FB page.

DOCUMENTING & SAVING CATERPILLARS IN KOTA KINABALU

Jimmy Lin Chee Onn

Butterflies act as important pollinators for plants to flower and fruit and without them, humans and other animals would face food shortages. Unfortunately, butterflies have been declining over the years due to habitat loss, deforestation, parasites, and other host plant availability problems. This is the main reason that encouraged me to begin the journey on saving caterpillars from every place possible in hope of slowing down the process of extinction so that the younger generation could still enjoy these flying jewels in the gardens and parks.

I started to raise caterpillars from one random occasion in 2018 where I found 17 Lime Swallowtail caterpillars (*Papilio demoleus*) on my citrus plant. I was curious about their life cycle so I decided to take them in to observe their daily life routine. I got the chance to observe how they eat, poop, and shed their exoskeleton to grow larger. It amazes me how they transform from larvae to chrysalis and then finally into a beautiful butterfly. The most magical moment is when they just emerge from the chrysalis and slowly expand their wings while hanging on their empty chrysalis.

In the past 4 years, I have successfully documented the lifecycle of 43 species. I am still regularly exploring around Kota Kinabalu to collect caterpillars from host plants that I have researched on. These caterpillars are collected, kept safe indoors with sufficient food until they have successfully transformed, and released back into the wild as healthy butterflies to continue their life cycle. I am always looking out for more species to document and save.



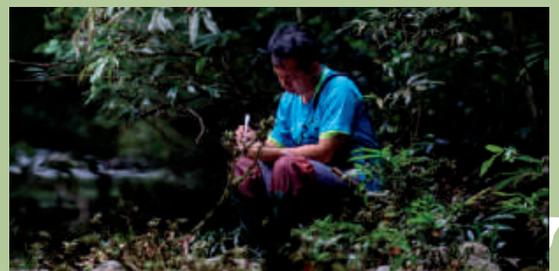
Hornbills at Tawau Hills Park

Aeril Bin Amputong

Taman Bukit Tawau ~ Taman-Taman Sabah



Tawau Hills Park is a Sabah Gardens station located on the east coast of Sabah. There are 8 species of Hornbills that can be seen and found in Bukit Tawau forest reserve, they are the Rhinoceros Hornbill, Helmeted Hornbill, Wreathed Hornbill, Wrinkled Hornbill, White-Crowned Hornbill, Bushy-Crested Hornbill, Black Hornbill, and Oriental Pied Hornbill. Hornbills are active in the morning and evening in search of food. Hornbills like to eat the fruit of arachnid trees, hornbills are from the omnivorous group, hornbills eat small birds, small snakes, insects and lizards. Hornbills mostly live in groups, mostly in groups of two to three. Unlike Bushy-Crested Hornbill and White-Crowned Hornbill, the hornbill lives in groups of more than 3 individuals. The Bushy-Cested lives in groups of 9 to 16, and the White-Crowned Hornbill lives in groups of 2 to 6. Most hornbills prefer to nest/lay eggs and raise their young in holes in trees, where the hornbills will cover the hole using excrement and soil until only a small hole is made for the male hornbill to feed the female hornbill who lays eggs in the tree hole. when the egg hatches the baby hornbill is growing, the adult hornbill will break the soil that is covered and come out of the hole and then close the hole again to let the baby hornbill grow in the hole and the male and female hornbills will feed the baby hornbill until the baby hornbill can fly own Unlike the Pied Horbill, he can nest like other birds by neatly arranging leaves to make a nest. As for the Bushy-Crested Hornbill, it will work together to feed the mother hornbill in the tree hole.



SALT LICK

The Sabah Parks

Silver Peter

A salt lick is a natural phenomena which attracts a lot of wildlife. Most hunters and researchers know this fact very well. There are many natural salt licks around the island of Borneo. Salt is usually missing from the diet of many animals thus a Salt lick attracts many animals. Several agencies on Borneo have also experimented on creating artificial salt licks. The results are varied but are usually positive. Silver Peter from Sabah Parks discovered a natural salt lick in Membakut, Sabah and he collaborated with 1StopBorneo Wildlife and placed a camera trap there. The results were outstanding. The Hoses Langur, a very rare langur species found in Sabah, was recorded. Very few records of this species exist in Sabah and they are also confined to the West Coast of Sabah Only. Yellow throated Marten, Sambar Deers, and crested fire backs were also found. The Bearded Pig was finally recorded after 1 year of ASF.



WILDLIFE POSTERS

AMAZING TURTLES of BORNEO

Did you know that almost all out of 254 species of turtles worldwide are endangered?

Species:

- Malayana Tiger (Chelonia mydas)
- Asian Flatback (Chelonia mydas)
- Asian Spiny-tailed (Chelonia mydas)
- Painted Terrapin (Pseudemys punctata)
- Malayan Island Turtle (Caretta caretta)
- Asian Softshell Turtle (Apalone muticus)
- Asian Pond Turtle (Caretta caretta)
- Asian Leaf Turtle (Caretta caretta)

EMERGENCY:

- Endangered
- Extinct
- Least Concern
- Conservation
- Recovery
- Extinct in the Wild

Did you know?

Turtles are an important part of the ecosystem. They help to control the number of insects and other animals that eat the plants and animals that they eat.

Photo Contributors:

- Liaw Wing Seng
- Chan Sing Wang
- Shane Cheema
- Charles Ryan
- Max Gardner

Key:

- ♂ Male
- ♀ Female

Poster design by: Ahlgai Tan

Hornbills of Borneo

Did you know? Hornbills are a very important keystone species in the ecosystem as dispersing seeds, including the seeds of large fruits, over long distances. There are 8 species of hornbills in Borneo and Tasek Ulu Park is a significant habitat for the critically endangered Helmeted Hornbill.

Species:

- Wrinkled Hornbill (Rhinoceros unicornatus)
- Helmeted Hornbill (Alcedo cornuta)
- White-crowned Hornbill (Alcedo cornuta)
- Asian Black Hornbill (Alcedo cornuta)
- Oriental Pied Hornbill (Alcedo cornuta)
- Weathered Hornbill (Alcedo cornuta)
- Kilgus Hornbill (Alcedo cornuta)
- Black-crowned Hornbill (Alcedo cornuta)

Photo Contributors:

- Liaw Wing Seng
- Chan Sing Wang
- Shane Cheema
- Charles Ryan
- Max Gardner

Key:

- ♂ Male
- ♀ Female

Poster design by: Ahlgai Tan

NON HUMAN PRIMATES of SABAH

Species:

- Proboscis Monkey (Rhinopithecus aeneus)
- Sumatran Orangutan (Pongo abelii)
- Lowland Macaque (Macaca fascicularis)
- Pig-tailed Macaque (Macaca leonina)
- Howler Langur (Presbytis entellus)
- Red Leaf Monkey (Presbytis rubicunda)
- White Leaf Monkey (Presbytis rubicunda)
- Green Leaf Monkey (Presbytis rubicunda)
- Orangutan (Pongo abelii)
- Southern Grey Orangutan (Pongo abelii)
- Bornean Orangutan (Pongo abelii)
- Bornean Orangutan (Pongo abelii)

Did you know?

Sabah is blessed to have 11 species of primates. Primates are a group of mammals which include monkeys and apes. All of them are mammals except the Slow Loris and Tarsier. The Sabah's Grizzled Langur is endemic to Sabah and the White Macaque of the Red Leaf Monkey is regularly sighted in the Tawau region.

Design & Layout: Ahlgai Tan

Photography: Shane Cheema, Chan Sing Wang, Charles Ryan, Charles Ryan, Charles Ryan

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- Instagram: @borneoworld
- Facebook: /borneoworld
- Twitter: @borneoworld

SCAN HERE!



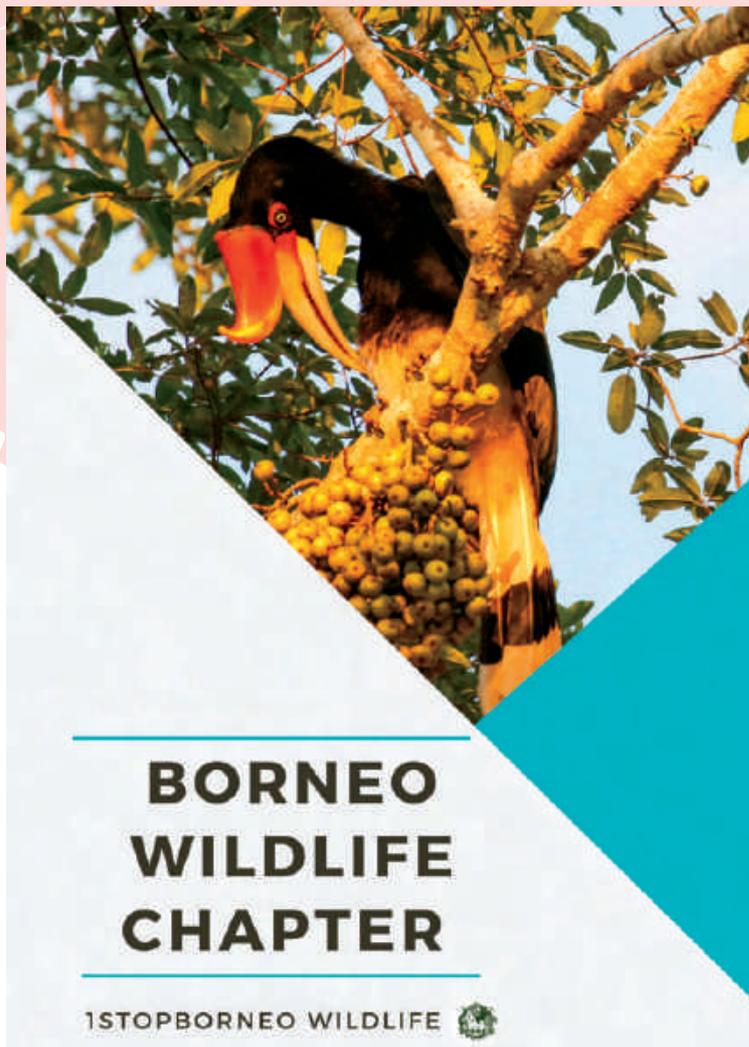
WILDLIFE CHAPTER

The Borneo Wildlife Chapter is a resource material designed for school teachers and parents. Most children on Borneo know more about the wildlife found in Africa or the Amazon than their own backyard animals. It can be downloaded for free here

<https://www.1stopborneo.org/library>

OR

simply scan the QR code below!



SCAN HERE!





BRUNEI

Brunei Nature Society



The aim of Brunei Nature Society (BNS) are to promote an interest in, and to study, Natural History in general and that of Brunei Darussalam in particular.

Visit our Facebook page for activities:
www.facebook.com/Brunei-Nature-Society-172706682807930



Photos by: Ulmar Grafe



Nepenthes Trail outing



The Society does this through:

- Organizing monthly lectures (usually on the second Tuesday of the month). The monthly meetings are open to non-members.
- Organizing a monthly outing for members (usually on a Sunday).
- Supporting the conservation of threatened species in Brunei Darussalam through research and education (The BNS Biodiversity Conservation Programme.)
- Working with relevant government departments to enhance and protect the natural environment and natural history of Brunei Darussalam.
- Organizing educational programs for children on aspects of natural history.
- Making available its library on natural history subjects to its members.

Common snakes of urban environments

Not all snakes are created equal

HARMLESS	HARMFUL
<p style="text-align: center;">Thin, red spots or green – tree snakes dream</p> <div style="text-align: center;">  <p>Parrot Tree Snake</p>  <p>Green Vine Snake</p> </div> <p style="text-align: center;">Tiny, shiny, and blind – so kind. Their good for your garden said the warden.</p> <div style="text-align: center;">  <p>Common Blind Snake</p> </div>	<p style="text-align: center;">Thick and black – stand back</p> <div style="text-align: center;">  <p>Spitting Cobra</p> </div> <p style="text-align: center;">Green with triangular head – do not touch, I said.</p> <div style="text-align: center;">  <p>Green Krait</p> </div>

Colourful Feathers: Selected birds of Brunei and Borneo

Husini Bakar



When I started birding in 2012, it did not occur to me that I will be printing a coffee table book of my bird photo collection. With a group of friends who call ourselves "Brunei Wildlife Photography Club" we were tasked with assisting the 1st Brunei Bird Race and the Borneo International Bird Race. Besides being the officials for the former event and local guides for the latter, it also included a photography exhibition of Brunei birds that we had taken. We later continue to exhibit our photos at various schools and venues organised by the Brunei Wildlife Department. As a result of these photo collections we planned to print a book in 2017. Unfortunately the plan did not materialised.

It was only after my retirement in 2019 that I seriously thought of compiling and printing my own photobook with my own financing. I decided to select only 127 out of my over 300 species of bird photos in my collection. This book is more focused on the beauty of the birds and appreciating their colourful feathers.

I selected Qasrun Nafis Publishing House as the editor and publisher of the book. Brunei Press Sdn. Bhd. was chosen as the printer. I hope my initiative will encourage other fellow Brunei bird photographers to produce more books in the future.

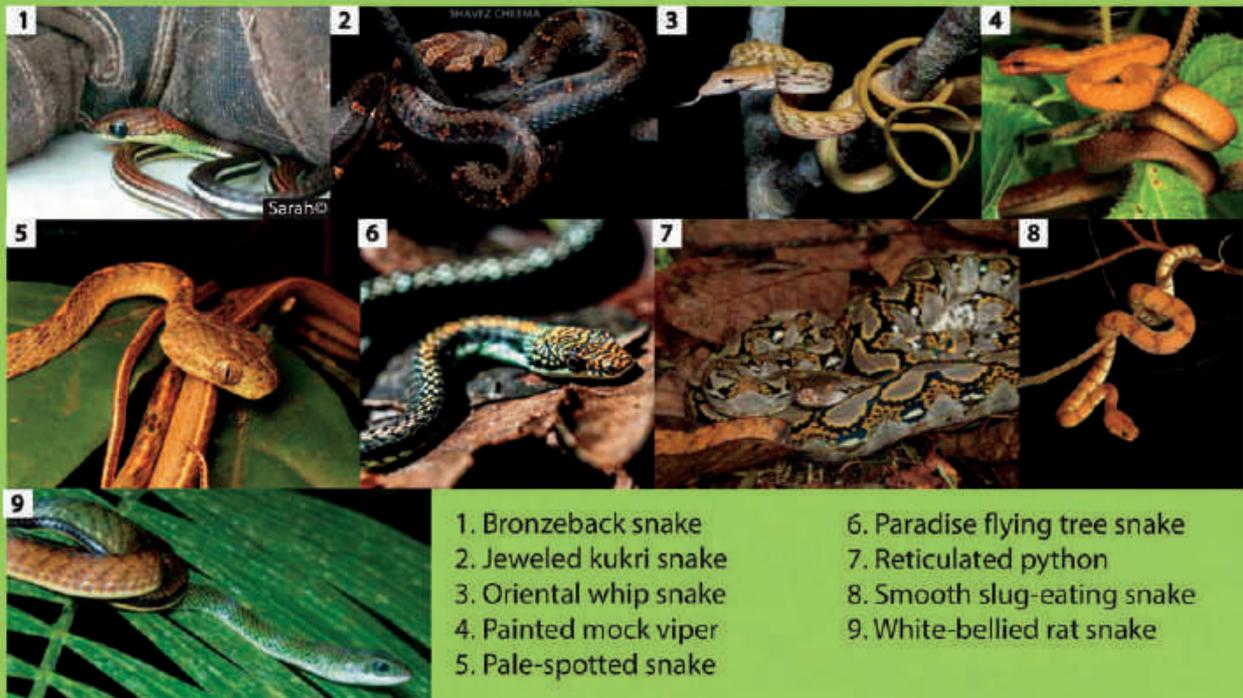
COMMON SNAKES IN BRUNEI

VENOMOUS SNAKE (BUT PLEASE, DON'T KILL IT.)



- | | |
|-------------------------------|-----------------------|
| 1. Banded krait | 5. Mangrove cat snake |
| 2. Banded Malayan coral snake | 6. Red-headed krait |
| 3. Borneo keeled pit viper | 7. Sea snake |
| 4. Dog-toothed cat snake | 8. Sumatran cobra |

HARMLESS SNAKE



- | | |
|------------------------|-------------------------------|
| 1. Bronzeback snake | 6. Paradise flying tree snake |
| 2. Jeweled kukri snake | 7. Reticulated python |
| 3. Oriental whip snake | 8. Smooth slug-eating snake |
| 4. Painted mock viper | 9. White-bellied rat snake |
| 5. Pale-spotted snake | |

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Joremy Tony (Brunei Nature Society & BruWILD).....	8934279



The image shows the interior of a large, dark cave. The ceiling is covered in numerous stalactites hanging down. A bright opening at the far end of the cave reveals a lush green forest outside. The floor is dark and appears to be dirt or sand, with some faint tracks or markings. The overall atmosphere is mysterious and ancient.

SARAWAK

Land turtles as the ‘forest engineers’: Case study of *Heosemys spinosa*

by Siti Nor Baizurah

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UNIMAS

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Chelonians (comprising turtles, tortoises, and terrapins) are known to serve as important ecological engineers and serve as keystone species in certain habitat as discussed in many studies occurring worldwide. One of their remarkable roles in environment including acting as seed dispersal agent to ensure the continuity of forest plant species and wildlife that depends on it. The land tortoises ingest the large fruits and disperse substantial numbers of plant seeds and in some cases, the tortoise gut passage also improved seed germination, leading to the widespread, successful establishment of new seedlings. In Borneo, study on the fundamental knowledge of land tortoise and their trophic ecology is limited given that most of the species presents in Borneo are listed as threatened species according to IUCN. Spiny Hill Turtle (*Heosemys spinosa*), an endangered forest-dwelling species first assessment of their feeding ecology based on a population in Sarawak described that Coleoptera (beetles) is the main categories that make up a major parts of animal matter in the diet of *Heosemys spinosa*. Apart from a variety of animal resources consumed, plant materials comprise a major part of its diet and includes a variety of leaves, fruits and seeds. Five indeterminate seeds also obtained during the period of study raising urgent study on their potential as seed dispersal agents which remarks on the importance of their role in the natural habitat. Additionally, two identified fungi specifically, *Boletus* sp. and *Russula* sp. observed to be their favoured diet that were actively searched for especially during blooming seasons. This marks the importance of trophic studies especially in Borneo which may serve as a crucial aspect of ecology that essentially provide an important insight on the fundamental knowledge of land tortoises and allow sound conservation management for future undertaking.



Female-*Russula* sp.



Russula sp



Boletus sp.

SFC PRIORITIZES THE SAFETY OF RESIDENTS DURING THE CROCODILE EGG REMOVAL PROCESS

Sarawak Forestry Corporation



31 may 2022

Kota Samarahan – Following the discovery of a nest with 44 crocodile eggs in Kampung Meranek, Kota Samarahan just now, the SFC team has managed to move the eggs to a safe place. During the removal process, drones are used to ensure the safety of everyone involved in the operation.

The public is advised to be vigilant and report to the SFC if they find a crocodile nest. For everyone's knowledge, during the nesting season, female crocodiles can be aggressive, especially in defending their nests.

HOW TO DIFFERENTIATE THE RHINOCEROS HORNBILL AND GREAT HORNBILL



Jason Teo Jia Hong
Malaysian Nature Society Kuching Branch



Rhinoceros Hornbill



Great Hornbill

The Rhinoceros Hornbills *Buceros rhinoceros* is very special to Sarawakians. It represents our home, culture and pride. Every Sarawak Day and Hari Gawai, we attach this majestic bird's image in various platforms, from posters to videos. Unfortunately, a lot of local companies and even statutory bodies keep using the wrong hornbill (*Great Hornbill Buceros bicornis*).

The goal of this article is to share three easy ways to differentiate between the Rhinoceros Hornbill and the Great Hornbill. Let's start with native homes. The Rhinoceros Hornbills are found in parts of mainland Asia, Sumatra, Borneo and Java. The Great Hornbills are found natively only in parts of mainland Asia and Sumatra. Thus, you cannot find any Great Hornbills in Borneo, this includes Sarawak.

Next, the neck. The Rhinoceros Hornbill's neck is all black, while the Great Hornbill's neck is mostly whitish yellow. Lastly, the casque. Rhinoceros Hornbill is a mixture of red, yellow and orange; while the Great hornbill's casque is more to just yellow, Scan the QR code below for a detailed video on how to differentiate between the Rhinoceros Hornbill and the Great Hornbill.

My hope is that one day, at least 80% of Malaysians will be able to differentiate between the Rhinoceros Hornbill and Great Hornbill. Change is slow, but I am confident that change will eventually come. Help catalyze this change by sharing this article and the video above with friends and families!



Poster with wrong hornbill
(Great Hornbill)



Scan
me

SOCIETY OF WILDERNESS SARAWAK (SOWS)



SOWS are very dedicated in increasing the awareness among the general public through organizing public talks, seminars, art & craft activities & etc.

SOWS Nature Observation Classes

The SOWS was initiated by a group of natural, wilderness lovers who found that the wilderness needs to be preserved and conserved to continue to serve as their playgrounds.

Founded in 2000, and formally registered as an NGO in 2007, SOWS continues to be run by voluntary citizens who share the same aims, that are to preserve natural habitats through nature education and conservation action for the future generation.

Over the years, SOWS organized sharing sessions, exhibitions and nature observation activities to promote awareness of nature conservation and nature education programmes for the general public.

Among the main establishments of the society is the SOWS Nature Observation Class which is conducted on a yearly basis. SOWS is preparing for the 14th intake of the class this year. SOWS also brings nature education to schools and education centers. The society believes that good habits should be instilled at a young age and hence runs a series of children nature observation activities as well.

The vision of SOWS is to obtain stewardship of land to conserve wilderness by allowing nature to recover and manage itself with the ultimate aim of preserving nature and wilderness in its original state for present and future generations. However, there is still a long way to go.

Wish to know more about SOWS, please visit <https://www.facebook.com/SOWSarawak> or write in to sarawaksow@gmail.com.



In 2000, Hsu, the Founder of Society of Wilderness Taiwan along with Li, the Secretary came to Kuching and collaborating with Coffee Chang founded the Society of Wilderness Sarawak.



21 July 2000: Timely blooming of Cotton tree at Plaza Merdeka.

Fruit Bats & Figs, Bear Garden restaurant, Central Kuching

by uluulublog

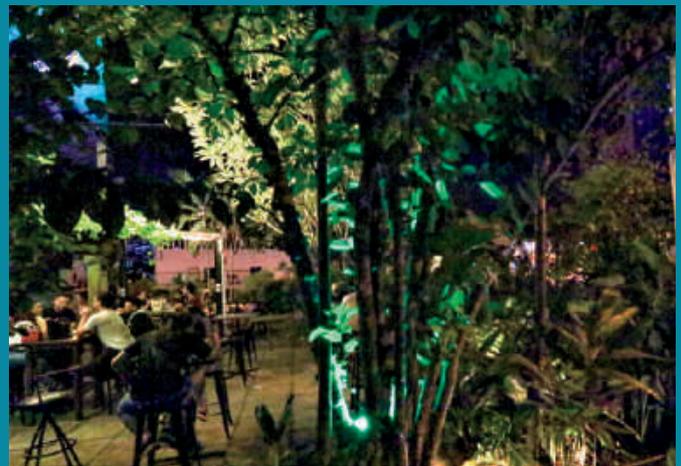
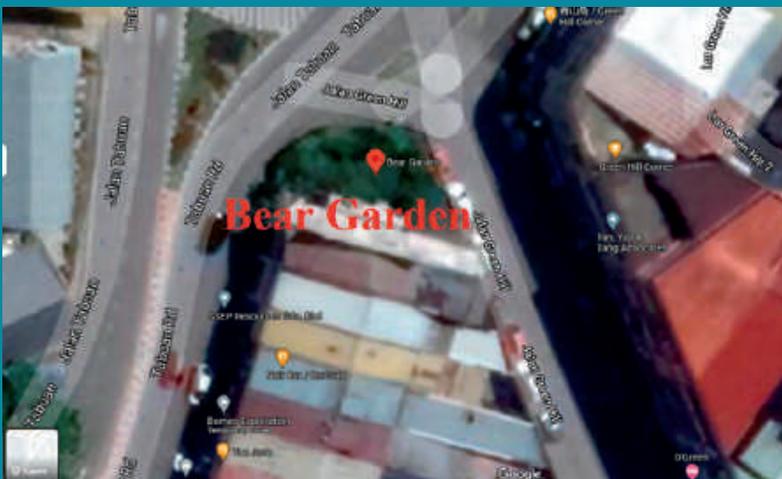
This fig tree fruits continuously with ripe figs available year round. Despite the flashing lights and noise of this busy restaurant, every evening the local colony of Short-nosed Fruit bats make constant repeat visits to collect ripe figs.

The Bear Garden restaurant is operated by Leo Biddle and the profits are used to support the Matang Wildlife Rescue Centre.

The Bear Garden restaurant is located on the corner of Jalan Greenhill and Tabuan Road a five minute walk from the Sarawak Museum. See map below.

The popular Bear Garden restaurant in central Kuching illustrated in the photos below hosts a prolific female *Ficus fistulosa* fig tree.

Photos and information provided by Shavez Cheema and Chun Xing WONG of 1Stop Borneo Wildlife.



MARUDI CYCLING PROJECT



**MARUDI
LONGHOUSE
CYCLING
ADVENTURE**

**RENT A BIKE FOR
RM50 PER DAY**

Description:
Cycling across the off-beaten track roads around the quiet town of Marudi; stay for one or two nights at the traditional longhouses, get indulged with friendly locals and traditional cuisine and surround yourself with captivating natural landscapes.

Contact/WhatsApp 016-858 9868 for bike rental.



IStopBorneo Wildlife For more info visit: www.istopborneo.org
NGO Registration Number: Or email to: 

The Marudi Cycling project is where everyone is welcome to visit the town of Marudi, south of Miri. They can rent a bicycle from Lukas, and go from longhouse to longhouse and experience authentic culture and traditions.

There are also nature treks that can be carried out in some of the villages of Rh Gudang and Rh Ridan. Lots of pitcher plants can be observed while cycling through Marudi. It is hoped a new forest reserve will be created here someday.

ANIMALS OF THE MONTH



Marbled Cat



Photo by Yulinda Wahyuni

Binturong

JOURNAL OF THE MONTH

2 March 2021

[Translator Disclaimer](#)

Sun bear predation on an oriental pied hornbill nest

Miriam N. Kunde, Benoît Goossens

[Author Affiliations +](#)

Ursus, 2021(32e3):1-4 (2021). <https://doi.org/10.2192/URSUS-D-19.00018.1>

ARTICLE

FIGURES &
TABLES

REFERENCES

CITED BY

Abstract

Sun bears (*Helarctos malayanus*) are opportunistic omnivores that feed predominantly on fruits and invertebrates, but predatory behavior by sun bears is rarely recorded. Although commonly described as a forest-dependent species, the sun bear is a generalist and seems to have some potential to adapt to changing environments. Here we report the first record of a sun bear preying on oriental pied hornbills (*Anthracoceros albirostris*) in their nest in the Lower Kinabatangan Wildlife Sanctuary in Sabah, Malaysian Borneo, during spring of 2019. It is a human-disturbed landscape surrounded by oil palm (*Elaeis guineensis*) plantations, with the remaining degraded forest providing a wildlife corridor for Borneo's wildlife. The sun bears photographed by camera traps along the wildlife corridor, including the predatory bear, appeared to be in good condition, therefore evidently finding sufficient food resources. Their opportunistic feeding behavior, not necessarily food shortage, may allow them to take vulnerable prey, such as this low-nesting hornbill.

Sexual dimorphism in *Heosemys spinosa* (Testudines: Geoemydidae) in Sarawak, Borneo

Siti Nor Baizurah¹ and Indraneil Das^{1,*}

Sexual dimorphism in turtles, comprising secondary sexual characteristics of morphology, has previously been reviewed by Berry and Shine (1980) and Gibbons and Lovich (1990). Colour differences (sexual dichromatism) have been discussed less often (but see Moll et al., 1981; Ennen et al., 2015), perhaps because of challenges associated with colour standardisation and loss of pigmentation details upon preservation (Coon, 1949).

Heosemys spinosa (Gray, 1831) is a mid-sized (maximum straight carapace length 275 mm; Goetz, 2007) tropical terrestrial turtle, currently listed as 'Endangered' in the IUCN Red List. The known distribution of the species extends from southern Myanmar, south into the Malay Peninsula, in addition to the islands of Sumatra, Borneo, and the southern Philippines (Bonin et al., 2006; Platt et al., 2014). The unusual morphology of the juvenile carapace gave rise to its common name of "walking pin-cushion" (Mardiastuti, 2008), and ontogenetic changes in its shell, particularly the relative flattening of the posterior marginal, that are lost with age appear in the taxonomic literature (e.g., Boulenger, 1889; de Rooij, 1915; Smith, 1931; Lim and Das, 1999). The strongly keeled spine present in juveniles is assumed to serve as a means to prevent being swallowed by predators. However, little has been published on sexual dimorphism and dichromatism in the species. Zug and Mulcahy (2019) were the first to report on the topic, describing carapace shape as "elongate, oblong, moderately domed and dorsally flattened in males" and "broad oblong and moderately domed in females." Further, a report by Spinks et al. (2012) indicated the presence of cryptic variation in *H. spinosa* based on the distinct genetic and phenotypic variation observed in large, confiscated specimens in Hong Kong and China. This included variation in size, iris colour, and shell colouration among the observed

specimens. However, a lack of reliable geographic provenance limited further systematic evaluation.

Materials and Methods

The following observations were made as part of a larger study on a population of *H. spinosa* at Kubah National Park, Sarawak, Borneo, East Malaysia (Park Headquarters at 01.6124°N, 110.1966°E; WGS 84; elevation 141 m; Fig. 1), that emphasised the spatial, trophic, and thermal biology of the species (Baizurah, 2021). This note addresses variation between sexes in colouration observed in 11 wild individuals and of morphology in six tagged specimens (two males, four females) fitted with radiotransmitters and iButtons. These six individuals remained tagged from April 2017–January 2019, and their straight carapace length (SCL) and straight carapace width (SCW) were measured periodically over the 22-month period. Sexual size dimorphism was assessed by comparing the allometric relationship of SCL and SCW between sexes. All measurements were log-transformed to achieve linearity in regression analyses. X-rays were taken using a Model E7239X Sedecal Apr-Vet radiographic unit with settings of 78 kVp / 25 mAs / 320 mA / 0.08 s. The Xscan radiology application (Version 2.10) was used to edit the images obtained. Measurements were taken with Mitutoyo CD-CSX vernier callipers. Photographic images were obtained using a Nikon D600 camera and a 105 mm MicroNikkor lens in a Lastolyte lightbox. A total of 11 individuals were examined for colouration, which was described using the standard colour swatches in Smithe (1975).

Results and Discussion

Size. The six individuals used in this study ranged in size from 125.2–240.3 mm, with males the larger of the sexes (mean SCL in males 210.8 ± 7.5 mm, in females 167.0 ± 25.3 mm). A significant difference (Pearson correlation, $P < 0.05$) was found between measurements (SCW = 1.204 ± 0.4266 SCL in males, SCW = 1.434 ± 0.3209 SCL in females), demonstrating that shell proportions in adult *H. spinosa* are sexually dimorphic (Fig. 2).

¹ Institute for Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia.

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Sexual dimorphism in *Heosemys spinosa* (Testudines: Geoemydidae) in Sarawak, Borneo

by Siti Nor Baizurah & Indraneil Das

Scan here!



JOURNALS OF THE MONTH

Ecology, occurrence and distribution of wild felids in Sarawak, Malaysian Borneo

Published online by Cambridge University Press: 22
June 2022

Jayasilan Mohd-Azlan ,
Sally Soo Kaicheen, Lisa Lok Choy Hong,
Melynda Cheek Ka Yi,
Marius Joscha Maiwald, Olga E. Helmy,
Anthony J. Giordano and
Jedediah F. Brodie 

Article

Article contents



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Abstract

Sarawak is the largest state in the
megadiverse country of Malaysia. Its rich

dback



SCAN ME

KALIMANTAN



PLANET INDONESIA



Pontianak - The Wak Gatak Songbird Rescue and Rehabilitation Center is now fully open as of June 6th! This unique conservation center consists of a two-story wildlife clinic complete with laboratory space, sterilization room, offices, kitchen as well as a quarantine building with 80 transport enclosures and three large rehabilitation aviaries encompassing 10 rehabilitation enclosures each. We are now ready to begin serving birds rescued from the illegal wildlife trade and rehabilitating them for release back into the wild in their home ranges among areas where we support community-led forest protection efforts.

"This is the first songbird rescue center in Indonesia that only focuses on victims from the illegal wildlife trade. We surveyed every district in West Kalimantan and found that, in just 30 days of surveying over 28,000 birds, the majority of sellers had birds taken from the wild. My dream is that one day we can close this rescue center. It may be a strange dream to mention on the day we open it, but as this center remains open it means there is an unsustainable and unhealthy relationship between the public and wild birds. We must work together so that the voices of Indonesia's forests are not imprisoned, we must work together to free the birds from their cages so that they can fly freely again in the forest - their home." _ Adam Miller

So far this year, our field staff have assisted the Indonesian government with rescuing over 1,612 animals from the illegal wildlife trade. Whilst our veterinarian, Dr. Happy, has been on site during these rescues, we are excited that now we have our rescue center open we can give wild birds the full veterinary and rehabilitation care they need for survival.

The Wak Gatak Songbird Rescue and Rehabilitation Center is just one of the many tools that we use to address the illegal wildlife trade. Planet Indonesia Conservation Manager, M. Wahyu Putra explains.

"It takes attention, understanding and joint efforts of related parties in overcoming problems regarding the protection of songbirds in West Kalimantan. Planet Indonesia has done and currently carried out several efforts such as providing songbird rescue and rehabilitation center facilities, behavior change campaigns, escorting court cases related to wildlife trafficking, and education through media reporting,"

Songbirds are an important part of the ecosystem in Indonesia and their protection is vital to the health of the overall habitat.

"The ecological role of bird species in the ecosystem is as a natural pollinator and seed dispersal, pest control, indicator of environmental change, and indicator of changing seasons," said Wahyu

According to Wahyu, bird species can be used as indicators of environmental health considering their role in maintaining ecosystem balance and environmental sustainability. Preservation of bird species must be maintained..

Rooted in the "Golden Age" of Indonesia, owning songbirds is a symbol of sophistication and wealth and is a tradition that has expanded beyond the Island of Java over the last several centuries. People have enjoyed having a small songbird outside their home, but at great cost to the birds on display and is a practice that is decimating the forest.

The Wak Gatak Songbird Rescue and Rehabilitation Center allows us to take one giant leap forward in our holistic approach to ending the songbird wildlife trade in Indonesia,

We want to give a special thank you to Mandai Wildlife Reserve, EAZA Silent Forest Group, Zoo Rostock, and our other supporters who helped make this project a reality.

This work is done in partnership with Bksda Kalimantan Barat.

Read more about our community-led conservation at planetindonesia.org

BATS, MANGROVE RESTORATION FIGHTERS IN MUARA BARITO



Bats Monitoring



C. Spinx

Barito, the second longest river in Kalimantan. As well as a river with the most degraded mangrove area especially it's estuarine. Barito starts from the Muller Mountains, crossing Central and South Kalimantan Province and empties into the Java Sea. Mangrove as one of important ecosystem is becoming increasingly difficult to find in Barito estuarine. Eroded by abrasion, being converted into residential, agricultural and fishing areas is a sad fact for the mangroves in the Barito River estuary today.

Mangroves are important key holders for coastal life. The best defense wall from natural disasters, water filtration devices, oxygen providers, air pollution filtration machines, homes for many aquatic biota to become a home for the charismatic primate Mascot of South Kalimantan Province, Proboscis monkey (*Nasalis larvatus*). The largest Popullasion of Bekantan live on Mangrove. Existence of mangroves is closely related to the survival of this endangered species.

Since 2014, Sahabat Bekantan Indonesia Foundation (SBI), the only Foundation in Indonesia that focuses on saving proboscis monkeys started a mangrove restoration project with the Rambai/Pidada Merah (*Sonneratia caseolaris*) species at the Barito river estuarine.

SBI obtains seeds naturally by harvesting ripe fruit in the remaining rambai population. The results of their research show that the presence of bats in the natural seed supply process is very important. Rambai trees are difficult to pollinate, bats are the main agents that can provide natural pollination services for it's trees. So, monitoring bats population is important for the success of the restoration program.

There are 5 species of bats that play a major role in helping Rambai pollination, namely: *Cynopterus brachyotis*, *C. minitus*, *C. sphinx*, *Eonycteris spelea*, and *Macroglossus minimus*. SBI find a pattern that the Rambai flower that blooms at night becomes the favorite food of these species. The existence of Bats on mangrove restoration lands is important as the main provider of rambai seeds. Thousands of rambai have been successfully planted on critical lands in the Barito river. The proboscis monkey habitat also grow well, the latest SBI monitoring on the island of Curiak (the main site of their mangrove restoration project) shows that the Proboscis monkey population in the 3 ha land area has increased from 14 individuals in 2016 to 23+ individuals in 2021. Availability of suitable habitat is one of the keys to the recovery of the proboscis monkey population in South Kalimantan. And it can't be separated from the help of bats as pollinating actors in the mangrove restoration process.



M. minimus



Rambai Seddling



Restoration Areas

Zainudin Basriansyah Akar
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Endemic Threatened

by Abdul Rahim Idris

Meratus mountains range is one of the oldest ophiolite rock formations in the world. These mountains stretch from south to north, dividing the province of South Kalimantan into two. Mentioning these mountains also means to include the karst complex with an amazing limestone arrangement, forming beautiful biogeographical areas around the foot of this mountain. Unfortunately, most of these karst areas are seldom studied about their flora and fauna comprehensively.

Almost all of these mountains are surrounded by limestone karst with significant coverage. The results of my last independent trip there prove that the Meratus karst is rich with limited range of endemic species. This karst row is inhabited by various kinds of small herbaceous plants from the Gesneriaceae family, such as *Paraboea kalimantanensis* which is endemic to this mountainous karst area, you can also find various types of *Aeschynanthus*, *Epithema*, *Monophyllaea* and *Rhyncoglossum borneense* living on steep limestone cliffs. Araceae and various other herbaceous families that are highly localized in this area.

Karst areas have long been considered as highly localized areas, meaning that some of the species that live there cannot be found anywhere else. This makes them all threatened by various things, one of which is the mining of limestone for the raw material for the industry of cement making. This mining destroys the habitats of many plant species which results in the extinction of significant amount of karst species.





Ular Bula
Indotyphlops braminus (Daudin, 1803)

ULAR-ULAR

di Binawara & Sekitarnya



Ular Pelangi
Xenopeltis unicolor (Boie, 1827)



Ular Pilon
Malayopython reticulatus (Schlegel, 1801)



Ular Kepela Dua
Cylindrophis nuffus (Laurenti, 1768)



Ular Sanca Darah
Python breitensteini (Steidachner, 1881)



Ular Air Pelangi
Enhydryis anhydrys (Scheider, 1799)



Ular Kadut Belang
Homalopsis buccata (Linnaeus, 1758)



Ular Lumpur
Miralia altemans (Reuss, 1934)



Ular Terbang
Chrysopelea paradisi (Boie, 1827)



Ular Tampar
Dendrelaphis pictus (Gmelin, 1786)



Ular Puouk
Ahaetulla prasina (Boie, 1827)



Ular Tampar Bergaris
Dendrelaphis caudolineatus (Gray, 1834)



Ular Sapi
Coelognathus radiatus (Boie, 1827)



Ular Kopi
Coelognathus flavolineatus (Schlegel, 1837)



Ular Tikus Coklat
Ptyas fusca (Günther, 1858)



Ular Air Coklat
Xenelaphis hexagonatus (Cantor, 1847)



Ular Cinori Mas
Boiga dendrophila (Boie, 1827)



Ular Viper
Tropidoleptus subannulatus (Gray, 1842)

 = Berbisa Mematikan



Ular Cabai Kecil
Crotaphis intestinalis (Laurenti, 1768)



Ular Anang
Ophiophagus hannah (Cantor, 1836)



Ular Kobra
Naja sumatrana (Müller, 1887)

BOOK CLUB

" K U P I - K U P I , B U K U - B U K U "

The Coffee, Books and Wildlife sessions have been happening regularly since its inception in December 2014. Over 40 sessions of this fun and engaging activity have taken place.

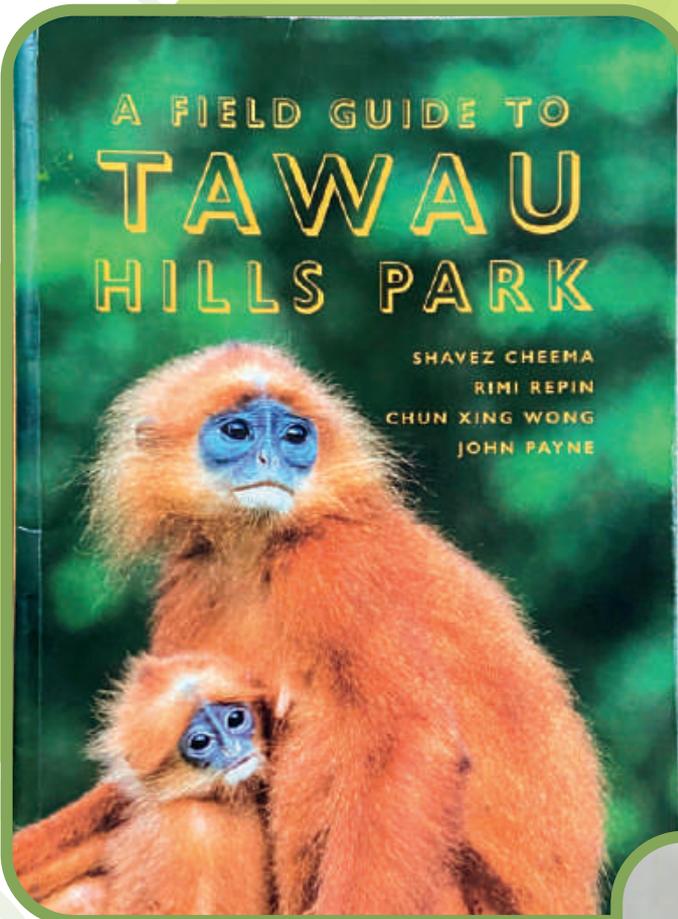
How does it work?

- Pick a place with lots of wildlife/nature books such as local public library, University library or a local NGOs library.
- Set a date for the session.
- Set the limit to a maximum of 10 people per session.
- Prepare draft paper and a pen/pencil for everyone.
- Anyone can choose any one book from the collection.
- Each participant gets 30 minutes each. They may not finish the book but may read up to 10-15 pages for discussion later on.
- Write down ANY interesting fact you have read.
- Once 30 minutes are over, each participant gets 5-10 minutes (make sure you have a timer) to share what they have learned.
- Prepare some light snacks! Enjoy!



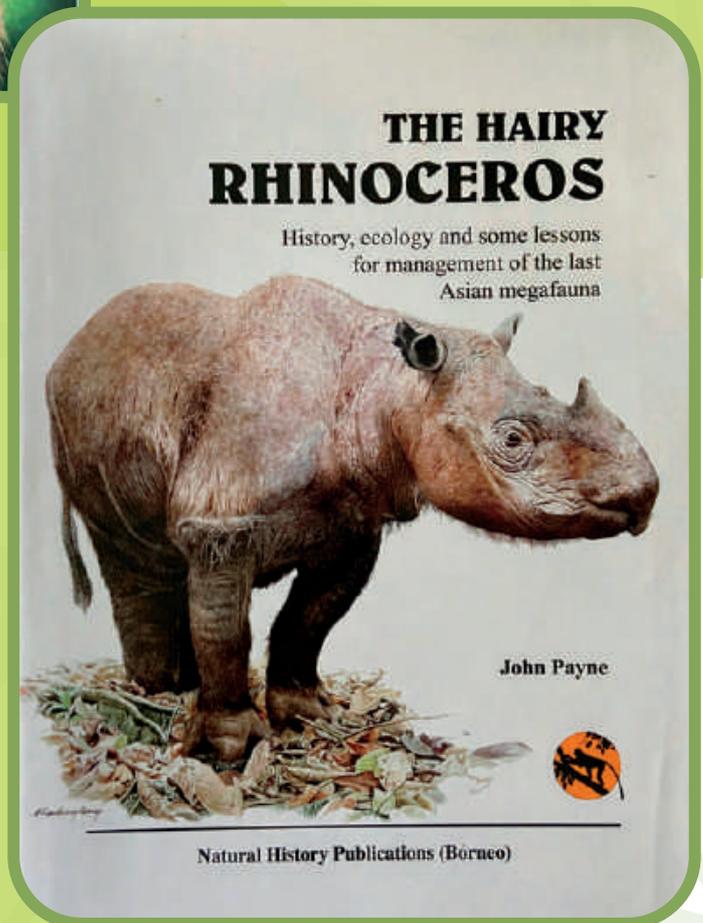
FUN, EDUCATIONAL, AND ENGAGING! 3 in 1!





BOOKS OF

THE YEAR



BOOKLETS OF THE YEAR

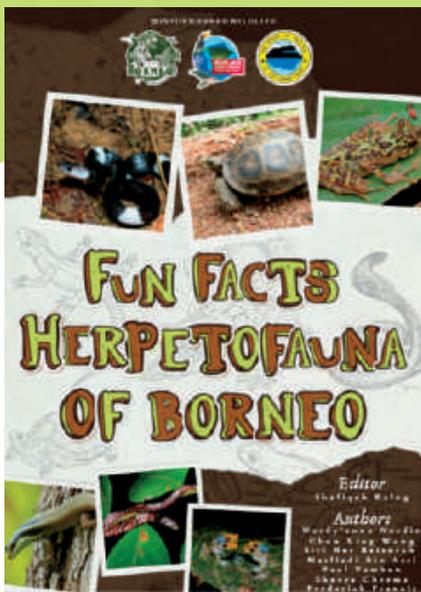
Come and enjoy these three simple booklets with interesting fun facts on Pangolins, Hornbills and Herpetofauna.



Fun Facts Hornbills of Sabah



50 Facts About Sunda Pangolins



Fun Facts of Herpetofauna

SCAN HERE!



CATS & DOGS!

Keep pet cats indoors, say researchers who found they kill 230m native Australian animals each year.

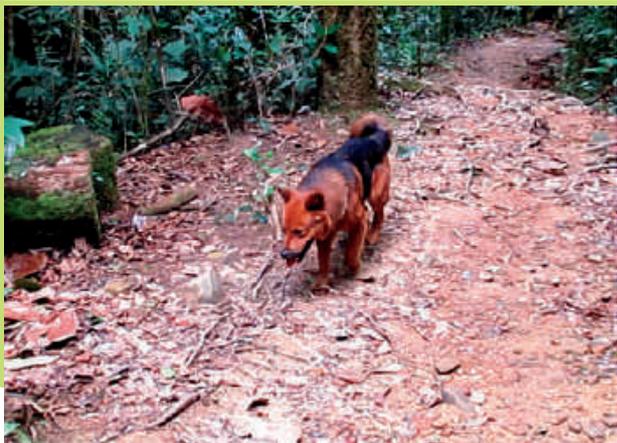
The study found each feral cat kills an average 576 native birds, mammals and reptiles per year, while pet cats kill an average of 110 native animals every year – 40 reptiles, 38 birds and 32 mammals.

In total, this meant pet cats were killing 66.9m native mammals, 79.7m native birds and 82.9m native reptiles every year. The study was not able to estimate the numbers of frogs and insects eaten by pet cats.

Because pet cats live in higher densities, they were responsible for killing up to 50 times more animals per square kilometre in residential areas than feral cats killed in out-of-town areas.

If you spot a stray cat or dog in a national park or reserve in Sabah & Sarawak, please immediately report it to the local park manager. Stray cats and dogs do not belong in a forest reserve or national park as they are destructive to the local fauna.

Source: The Guardian, (May 15, 2020) <https://www.theguardian.com/environment/2020/may/15/keep-pet-cats-indoors-say-researchers-who-found-they-kill-230m-native-australian-animals-each-year>



SUNBEARS EAT FIGS

A relatively small *Ficus subcordata* fig started fruiting next to the roadside at INNIKEA early in December 2021.

The fruiting attracted 4 species of Hornbills and other wildlife. On 13 December 2021, 3 camera traps were placed below the fig tree.

A large male Sun bear was first recorded on 19 December 2021 as shown above and below. On 22 December this same Sun Bear climbed into the canopy of the fruiting fig tree. This same Sun bear returned again on 23 December 2021. The Sun Bear was not seen again until 26 January 2022 when he re-visited after the fig tree had stopped fruiting.

From camera trap photos taken by Wong Siew Te at Danum Valley, it appears that up to 3 different individual Sun bears may visit the same fruiting fig. However at this site only one individual was recorded making repeated visits.

We know that forest birds such as barbets and hornbills are fully aware of the fig trees that occur in their home range and regularly check the status of fruiting so that they can visit to feed as soon as the first figs ripen. Once they have found a fruiting fig, male barbets often call continuously from the tree to attract females to mate. Barbet calling broadcasts the location of the ripe figs to gibbons, orangutans and other fig feeders.

But how do Sun bears know when fig trees and other fruit trees within their home range are fruiting? The dates of the photos shown below indicate that they don't, otherwise this Sun Bear would have visited earlier and not visited when the same tree was not fruiting. It seems most likely that Sun Bears find fallen fruit by chance. However once they know the location of all the fig trees within their range they may visit these localities on a more regular basis.





1STOPBORNEO WILDLIFE
PRESENTS



Plantation

"BORNEO
WILDLIFE
SERIES"



COMING
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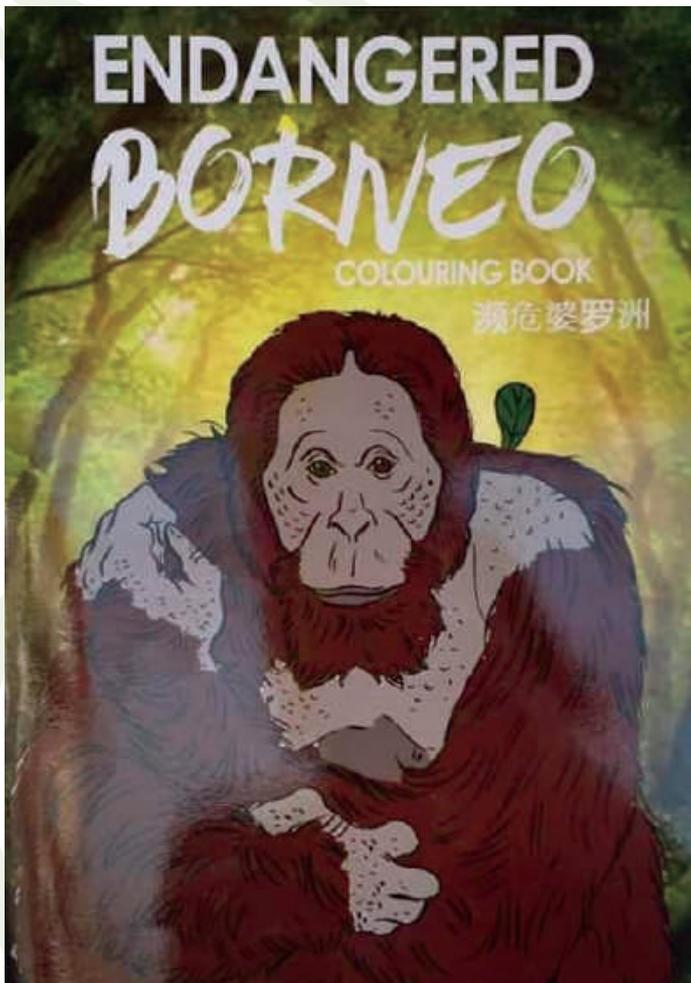
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<https://www.1stopborneo.org/field-guides>

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Pangolin Poaching
 Photo by Shavez Cheema

