Photo credit: Chiel B

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VISITORS HIGHLIGHT

Ministry of Tourism, Culture and Environment

The Bornean Elephants

IN THIS ISSUE

Visit from the Ministry of Tourism, Culture and Environment.

Group photo with the Ministry of Tourism, Culture and Environment, Sabah Wildlife Department visitors and DGFC staff.

We were truly honoured to welcome representatives from the Ministry of Tourism, Culture and Environment (KePKAS) and the Sabah Wildlife Department (SWD) to the Field Centre recently.

The Permanent Secretary (SUT) of KePKAS, Datuk Josie Lai, visited DGFC as part of her tour of wildlife project sites across the region. Her visit provided a valuable opportunity to showcase the breadth of research, conservation initiatives, and collaborative efforts currently underway to protect and restore Sabah's extraordinary biodiversity.

During the visit, our guests were introduced to DGFC's mission, ongoing field projects, and long-term research programmes that contribute directly to evidence-based conservation and policy development. The delegation joined us for an engaging presentation followed by a walkabout of the centre's facilities, where they gained insight into our daily operations, student training programmes, and the challenges and rewards of conducting fieldwork in one of Southeast Asia's most ecologically significant landscapes.

The delegation also included Puan Mary Malangking (TSUT, KePKAS), Tuan Sailun Hj Aris (Deputy Director II, Sabah Wildlife Department), and Puan Sylvia Alsisto (Senior Wildlife Officer, SWD Kinabatangan), alongside dedicated officers from both KePKAS and SWD. Their presence highlighted the strong and ongoing collaboration between research institutions and government agencies, a partnership that is essential for ensuring effective wildlife management and sustainable development across Sabah.

Datuk Josie Lai and Puan Mary Malangking planting trees at DGFC.

A meaningful highlight of the visit was the tree planting ceremony, where Datuk Josie Lai, Puan Mary Malangking, and Tuan Sailun Hj Aris joined us in planting native tree saplings, a symbolic gesture underscoring our shared commitment to habitat restoration and the long-term resilience of the Kinabatangan landscape. Reforestation plays a vital role in strengthening ecosystem health, improving habitat connectivity, and supporting the region's rich biodiversity. The visit as a whole reinforced the importance of collaboration between science, policy, and community engagement, with DGFC continuing to contribute research that informs conservation strategies while training and inspiring the next generation of conservationists through immersive, hands-on field experience.

Bornean Elephants

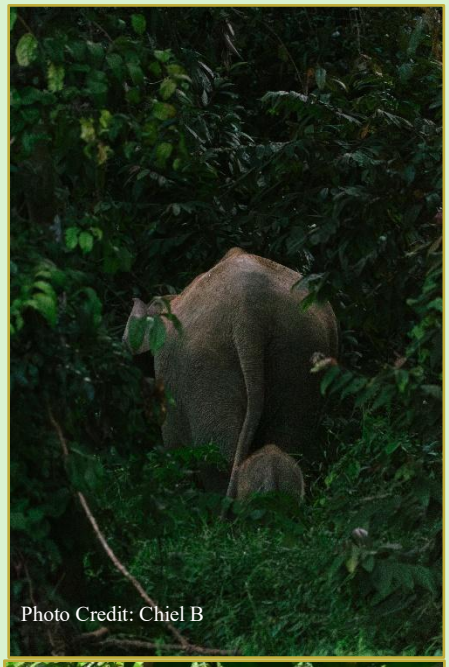


Photo Credit: Chiel B

Photo Credit: Ray Z

At the start of the new year DGFC welcomed back our twice-yearly visitors, Bornean elephants (*Elephas maximus borneensis*). The group of around 30 elephants were seen for a month along the Kinabatangan River, swimming and grazing before eventually crossing the river and making their way through DGFC. We also had a special visitor of a one-tusked elephant known as "Gading" which made his appearance to the field centre for the first time in 5 years (photo by Ray Z). Although these noisy visitors only passed through within a day, we had a lone male that made DGFC his home for the better part of 3 weeks. Throughout his stay we PTYs learned the incredible camouflage abilities of elephants within the Kinabatangan forest, hiding in plain sight and blending in with the foliage.

Unfortunately, the Bornean elephant has been classified as Endangered on the IUCN Red List after a population decline of 50% in the last 3 generations. This is mostly due to fragmentation of forested areas and disruption of elephant migration routes resulting in an increase in human-elephant conflicts. One such conflict is the development of the Pan Borneo Highway (PBH) which is a road network that goes through Sabah and Sarawak, sometimes cutting through protected forest areas and elephant migration routes. To attempt to counteract the effects of PBH, DGFC along with the NGO Seratu Aatai is undertaking collaring and tracking of elephants to determine the effects of the PBH on elephant migration. These efforts are funded by Yayasan Hasanah and the British Council in the effect to urge policymakers to take action to ensure cohabitation of elephants and humans in the construction of PBH.

On a positive note, our local Bornean elephant troop successfully crossed the Sandakan-Lahad Datu 2-lane highway, which is a rare occasion. This gives hope to the continued migration of elephants through Sabah, and cohabitation between people and these incredible animals.

Photo Credit: Chiel B

Photo Credit: Hannah Y

Ectomycorrhizal fungal communities - Ollie Hall


Scally tangerine mushroom

(*Agaricus trisulphuratus*)

Fungi are more closely related to animals than plants and therefore fungi and humans share a lot of similar problems. For example, bacterial infection hence penicillin but also the need to eat, as fungi aren't autotrophs (producing their own energy) like plants. Instead of putting food into their 'stomachs' fungi put their 'stomachs' onto their food by releasing powerful enzymes onto organic matter like wood or leaves. The fungi which primarily obtain their energy / carbon through this method are called saprophytic fungi (decomposers). However excreting amble enzymes is energetically expensive therefore a huge group of (mycorrhizal) fungi have evolved a different strategy to obtain nature's currency – carbon. With access to a huge armoury of enzymes and mycelium with an average diameter of 4-6 μm (0.004mm – 0.006mm) they can mobilize nutrients (phosphorus, nitrogen etc) locked up in soil and dead biomass which they provide to plants. However, just like my dad used to say nothing is free in this world and the fungi receive sugars (trehalose) in exchange.

Thus, a symbiotic relationship is formed via the 'trading' of molecules; plants provide sugars and the mycorrhizal fungi provide nutrients. Together these two organisms are nutritionally dependent on each other and fungal cells can even be found in-between root cells. With 80-90% of plants forming mycorrhizas and fossils from 400 million years ago depicting colonised plant roots this is a hugely important relationship to everything on earth.

However, as is true with most aspects of mycology, mycorrhizas are highly understudied, yet extremely diverse. One morphotype, characterised by its mycelium forming a sheath around the outside (see below) of plant roots (picture a root dipped in melted chocolate) are called ectomycorrhizal fungi (EMF) and these are the only type to produce mushroom. Despite EMF associating with a relatively low number of plant taxa, they are usually the most dominant in the ecosystem, for example oaks (*Quercus*) in an English forest or D*iptocarps* in a Bornean jungle.

Me and 2 *Amanitas*

My project focuses on the phenology (when the fungi produces a mushroom), abundance (number of mushrooms) and the potential plant host. Aiming to describe an EMF fruiting season allow for more concise data collection in the future. By potentially linking EMF to host trees enables the potential for forest restoration via fungal inoculum (myco-forestry).


'Sheathing' mycelium covering the roots of a diptocarp.

I have 3 transects at Kaboi Stumping (Regrow Borneo site) with the aim of assessing the success of forest restoration on restoring EMF communities. One transects in two forests with minimal disturbance; Batangan and Bukit Mensuli which will act as 'control sites' i.e what the population should be like in the absence of disturbance. The latter being a primary forest owned and managed by Sawit Kinabalu (a Sabah owned oil palm plantation) which is an exciting collaboration arising from Amanda Wilson's (PhD students) hard work in nurturing relationships with the surrounding plantations over the last few years. I shall visit these transects once a week collecting and identifying the mushrooms I find from the soil to genus level, using this information to determine if they are EMF.

Furthermore, thanks to Dr Benoît Goossens and Dr Milena Salgado Lynn, I have been put in contact with Dr Jaya Seelan at University Malaysia Sabah (UMS). I plan to visit his lab and process the DNA of my dried samples, allowing for species level identification and even the prospects of finding a species unrecorded to science!

The project is in its early days, with just a few weeks of data collection, so as you can expect my methods are being refined and the hurdles which we all experience in the field are being navigated. However luckily (for me) the rain is pouring and the mushrooms are arising! The fungal future is approaching…

Amanda's Cat Project Update

In the field where the collar was found.

On a routine tracking attempt for Amanda's (PhD student) leopard cats, our team found an existing collar on the plantation floor. After checking the data, Amanda concluded the collar belonged to our newest member Nala!

Nala was collared on the 6th of December 2025, adding new data for Amanda's project. These GPs collars assess the leopard cat's habitat using remote sensing, allowing us to understand their behaviour through monitoring their movement within the plantations. Sadly, due to the short-lived data, Nala can't be used within the project, however her data can be used for some cross refencing on sleeping sites and prey abundance.

One possible explanation for Nala slipping out her collar relates to natural weight changes that follow pregnancy. The collar was fitted securely while she was still pregnant, when her body was carrying the additional weight. After giving birth, and nursing her kittens, it's likely Nala gradually lost her pregnancy weight. As her body returned to pre-pregnancy size, the collar may no longer have fit as snugly as intended.

Although this may have felt like a setback, there are still exciting things ahead for Amanda's project, including the possibility of collaring and tracking two new leopard cats!

Rare Species Sighting!

Photo Credit: Amanda W

Photo Credit: Amanda W

In January, Amanda, Hannah (PTY) and the cat tracking team were fortunate enough to have encountered a rare species on their way back from field work on the Kinabatangan River.

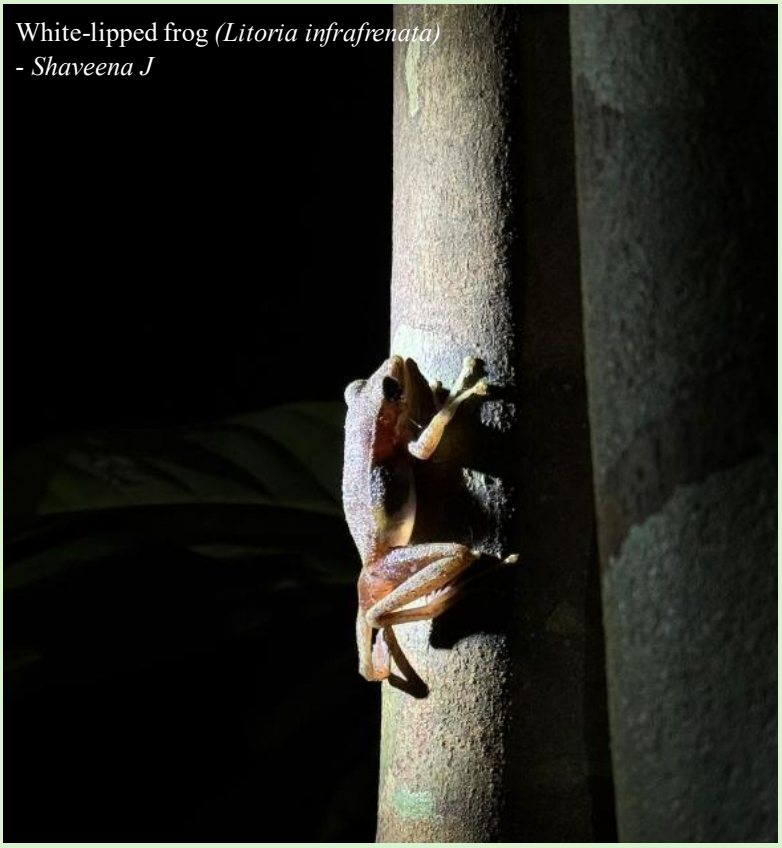
A binturong *(Arctictis binturong)!*

These medium sized carnivores are from the civet family (Viverridae) and have a wide geographic distribution in South-east Asia. These mammals are nocturnal or crepuscular (relating to the time of day just before the sun goes down), so sightings are very limited. The binturong's habitat is thought to have been forest dependent however its exact habitat requirements are unclear. Consequently, habitat loss and hunting have led to its classification as Vulnerable by the IUCN Red List of Threatened Species.

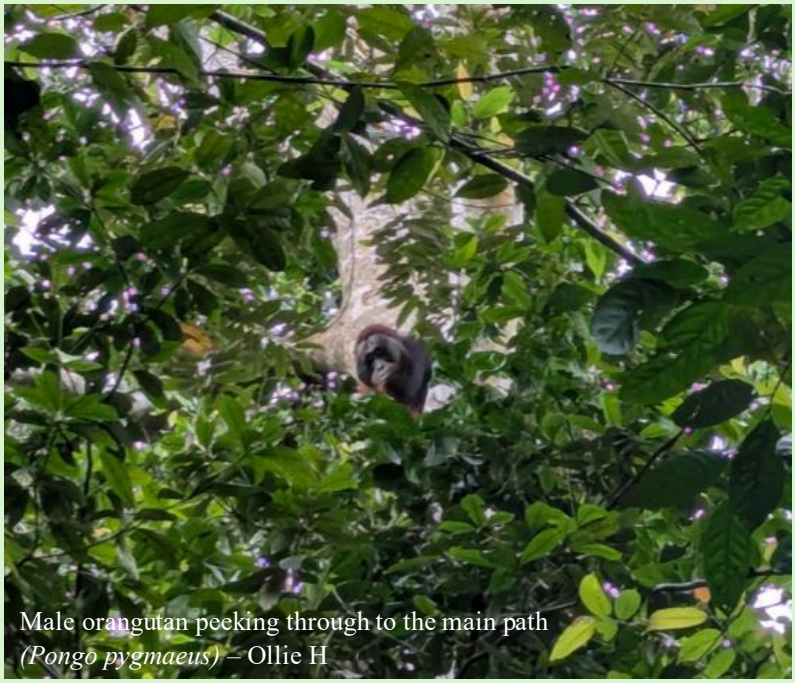
Binturongs are usually seen high up in the canopy, moving slowly through the trees. So being able to witness one safely swim across the river is very uncommon and a truly incredible once in a lifetime opportunity. Additionally, a fun fact about binturongs is that they are often detected by their distinctive popcorn-like scent!

PTY point of view

Baby Bornean Elephant *(Elephas maximus borneensis)*- Hannah Y



White-lipped frog *(Litoria infrafrenata)* - *Shaveena J*



Male orangutan peeking through to the main path *(Pongo pygmaeus)* – Ollie H

Stars whilst on night field work – Shaveena J

Chocolate pansy *(Junonia iphita)* – Ollie H

Vampire crab *(Geosesarma spp.)* – Hannah Y

Ramaria sp. – Ollie H

Four lined-tree frog (*Polypedates leucomystax)* – Chiel B

Bornean Elephant *(Elephas maximus borneensis)* - Hannah Y

Huntsman spider *(Sparassidae)* eating a grasshopper – Chiel B

6am Sky – Shaveena J

Creature Feature

Leaf insect (family Phylliidae)

Ollie H

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