



2024 YEARLY ACTIVITY REPORT



*Report prepared by Professor Benoît Goossens and John Robertson
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www.danaugirang.com.my*

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INTRODUCTION

The Danau Girang Field Centre (DGFC) was established in 2008 through a formal partnership between the Sabah Wildlife Department (SWD) and Cardiff University (UK). The Centre continuously contributes to and supports the long-term conservation strategies in Sabah. It undertakes scientific research to develop a better understanding of how wildlife survives in a degraded, fragmented landscape that is also impacted by human pressures such as hunting, agriculture, and climate change.

Ground-based, targeted data are used to inform and shape Sabah's conservation strategies, including the State's five species action plans. Our work also supports the reforestation of the surrounding area, establishing new forest reserves and wildlife corridors.



Kinabatangan River at Lot 6

We provide higher education opportunities to Malaysian and international students, up to PhD level. We also host university field courses and support an in-house Education Team that actively promotes the conservation of our wildlife and their habitats to our schools, communities, learned societies, and at public events throughout the State of Sabah.

VISITORS TO DGFC 2024

Research Assistants, Professional Training Year Students 2024-2025

Six students, from Cardiff University (3), Aberystwyth University (1), University of Cumbria (1) and University of Kent (1) joined DGFC in Kota Kinabalu in September where they took part in their initial induction training, before heading to the field centre for further training before their project work began. They will spend a year at DGFC, supporting every day activities and undertaking their individual research projects, under the supervision of DGFC's Director, Professor Benoit Goossens (Cardiff University).



From L-R: Jemma, Will, Amy B, Amy L, Katie and Ben

University of Wyoming and Cardiff University Visit

Researchers from University of Wyoming (USA) and Cardiff University met at the field centre to discuss the potential to establish various collaborative research projects. The meeting was attended by Benoit Goossens, Tristram Hales and Pablo Orozco-ter Wengel from Cardiff University, Brent Ewers, Michael Dillon and Danielle Berardi from University of Wyoming. As well as identifying the potential for a number of collaborative research projects, discussions led to the agreement of an inaugural University of Wyoming Field Course to be held at the centre in late May 2025.

Polish University PhD Competition Winners



As part of DGFC's developing relationship with Polish Universities, we welcomed Daria, Joanna, Mariusz and Paulina, four PhD prize winners from Poznan Universities who chose to spend 11 days at the centre as part of their university's celebratory scholarship programme. They also impressed the DGFC team by their enthusiasm as they immersed themselves in all the research activities, including waking at 3:30am to spend over eight hours in the forest to observe the bird mist netting survey as part of the Regrow Borneo project.

Madita Osche

Madita, from Munich (Germany) and a veterinarian undergraduate at Universität München, came as part of her university's internship programme. Passionate about becoming a wildlife veterinarian, Madita took part in research project work as well as supporting DGFC's resident veterinarian, Dr Reza.

US Fisheries and Wildlife Department and US National Wildlife Forensics



DGFC had the privilege of hosting a delegation comprising six members from the United States Fisheries and Wildlife Department and the United States National Wildlife Forensics Laboratory. The delegation, comprising of Erin, Eileen, Hope, Maria, Nikita, and Pamela, also visited DGFC's forensics laboratory in Kota Kinabalu, before heading to the Field Centre in the Lower Kinabatangan Wildlife Sanctuary.

During their stay, they participated in DGFC's ongoing research projects, gaining a firsthand insight into our role in combating wildlife crime within Sabah. They also gave presentations to the resident researchers and students at the centre detailing their forensic work in support of US Customs and allied wildlife protection agencies.

Ben Newport

A recent PhD graduate from Cardiff University visited DGFC to experience fieldwork first hand after studying drone technology for forest conservation, a chapter of his thesis regarding the work carried out at Kaboi Lake, one of the Regrow Borneo Project's research sites.

Dr. Marie Dannay



Dr Dannay is a French plant biologist who visited DGFC as a volunteer. She received her PhD in 2023 from Université Grenoble Alpes (France) and University of Geneva (Switzerland), researching the effect of uvB radiation on the photosynthetic activity of microalgae. At DGFC, she enjoyed working alongside researchers and students in the field and understanding what is required to undertake work in a tropical environment. One of her favourite moments was being able to witness a group of Bornean elephants in the wild, crossing the Kinabatangan River.

Everton Machado Simoes and Annie Dunn: Global Opportunities, Cardiff University



Annie and Everton

Through the UK's Global Opportunities programme, Cardiff University offers its undergraduate students links to over 300 institutions and organisations, worldwide and DGFC is one such facility.

This year Annie and Everton were awarded scholarships and chose to spend a month at the centre to actively take part in our ongoing research projects and experience first-hand what it's like to undertake research in a tropical rainforest.

Curt Coleman

Curt is an animal management specialist at The Wilds, Columbus Zoo, Ohio, USA, with



Curt presenting to PTY's at DGFC

significant experience of keeping and rearing Javan banteng in captivity. As well as presenting Columbus Zoo's banteng programme to the students at the field centre, Curt also presented the wider details of banteng husbandry to the SWD who are considering establishing a captive breeding programme in Sabah.

DGFC is working with The Wilds as they take care of a herd of Javan banteng. Work at DGFC supports the conservation of Sabah's wild population of banteng, whereas The Wilds work to increase numbers in their captive population. They have achieved reintroductions of other species into the wild, and their work makes this a possibility for the Bornean banteng.

Lizzie Rice: Cardiff University MSc student

As well as attending the Cardiff University Field Course in June 2024, Lizzie stayed on at DGFC to focus on activities associated with her master's dissertation on proboscis monkeys. Actively supporting the collection and analysis of camera trap data she joined the Regrow Borneo team during their small mammal monitoring surveys.

University of Wyoming

John and Nancy Koprowski, Lindsey Mitchell, Laura Schmid-Pizzato and Jenny Stark visited the field centre to learn more about the centre's work and experience some of the field research activities. John Koprowski is a longstanding associate and supporter of DGFC and is Dean of the Haub School of Environment and Natural Resources. The visiting group included members of University of Wyoming's Board and John's student Lindsey, who will be studying at DGFC in 2025 as part of her Master.

Sam Tillett

After completing his master's degree in Global Ecology and Conservation at Cardiff University, Sam enrolled at DGFC to volunteer as a research assistant. His work focused on trialling the "Tillett Trap," an innovative X-shaped camera trap designed during his postgraduate studies. This non-invasive method proved highly effective, capturing a wide variety of reptiles and small mammals while minimising disturbance to their natural behaviour.

Camille Steux: Université Toulouse III Paul Sabatier, France

Camille spent three months at the field centre as part of her PhD on population and conservation genomics. Camille's PhD is co-supervised by Benoit and his long-term collaborator, Dr Lounès Chikhi. Camille enjoyed learning more about tropical forest ecosystem and its wildlife, and how applied research can help the related challenges of habitat loss and fragmentation. Camille also took part in everyday fieldwork, such as animal tracking and habitat assessment, and was lucky to witness the capture, collaring and release of a leopard cat and the safe release of a pangolin which had been found and handed into DGFC for a health check.



Camille (4th from the left) and Sam (fourth from the right)

Lale Nuske

Ms Nuske, a Geography and Meteorology student from the University of Hamburg was undertaking her one year abroad in Malaysia, consisting of one semester at Universiti Malaysia Sabah and then a four-month internship at DGFC. Interested in climate change, biology and forestry science, she supported the Regrow Borneo project and received first-hand experience of the field work involved as well as taking part in other research projects.

FIELD COURSES

DGFC hosted six international field courses in 2024, including Cornwall College, Royal Holloway, University of London and Cardiff University from the UK; University of Freiburg from Germany; Project Dragonfly-Miami University (Ohio) from the USA; and St. Joseph's International Institute from Singapore.

Since 2008, when DGFC first opened its doors for its inaugural field course, it has welcomed over 20 global institutions, many of whom remain regular annual visitors. Normally lasting between 7-14 days, the students undertake various field activities, predominantly designed by the home institution, with many involving projects which contribute to the student's degree programme.

All activities are supported by the centre's resident research staff, wildlife veterinarian and field assistants who support the field course activities and the required logistics to meet the individual needs of each field activity.



University of Freiburg – March 2024



Cornwall College – April 2024



Cardiff University – June 2024, visiting the Bornean Sun Bear Conservation Centre



Project Dragonfly (Miami University, Ohio) – July 2024



Royal Holloway, University of London – August 2024



Tree planting with St Joseph's International Institute, Singapore – November 2024

EVENTS, CONFERENCES AND WORKSHOPS

Benoit Goossens in Poland

Benoit Goossens was invited by the Marshal of the Wielkopolska Region, Poland, to give the inaugural lecture of the Central European Hydrogen Technologies Forum-H2Poland organised by the Wielkopolska Regional Government on 24-25 April 2024 in Poznan. The Forum focused on issues related to preparing to achieve climate-neutral economies in order to respond to the adverse climate changes.

Benoit also visited the Poznan University of Life Sciences, the Cieszkowski College and the Dendrological Garden, the Faculty of Biology and the Faculty of Geographic and Geological Sciences of the Adam Mickiewicz University, the Poznan University of Technology (picture below) and finally was taken on a field trip to Warta Landscape Park

and visited the Nature Education Centre in Lad. It was an excellent opportunity to establish strong links with the Wielkopolska Region and its different universities.



Visiting Poznan University of Technology: From left to right: Mr Piotr Kurzawski (Head of the Department of Economy, Vice-Rector for Development and Cooperation with the Economy), Professor Michal Wieczorowski (Head of Division of Metrology and Measurement Systems, Institute of Mechanical Technology, Faculty of Mechanical Engineering and Management), Benoit Goossens, Professor Marek Kraft (Faculty of Control Robotics and Electrical Engineering) and Mrs Beata Kocur (Deputy Head of the International Cooperation Department).

February 2024: Amaziasizamoria Jumail in Mexico

In February, Amaziasizamoria Jumail (PhD student at Cardiff University and DGFC's research officer) travelled to Mexico for her three-month international attachment, funded by the Merdeka Award.



Ms Amaziasizamoria is pictured in the centre

5 March 2024

DGFC presented at a conference in conjunction of World Wildlife Day 2024 organised by Universiti Malaysia Sabah and SWD. Title: 'Using real-time and passive visual and acoustic systems, and spatial monitoring platforms, to support intelligence and enforcement activities in Sabah'.

13–14 May 2024: *Workshop Human Crocodile Conflict*

This workshop, organised by DGFC and Sabah Wildlife Department (SWD), resulted in a list of actions to manage the short, medium and long-term actions necessary to mitigate human-crocodile conflicts in Sabah. It was attended by several members of the IUCN Crocodile Specialist Group.

4–5 June 2024: *Mid-term review of Banteng Action Plan*

The mid-term review of the banteng action plan (organised by DGFC, WWF Malaysia and SWD) identified the past five-year achievements by several organisations in Sabah and the actions to focus on over the next five years.

23 August 2024

Organised by Yayasan Hasanah, DGFC attended a consultation workshop that focused on the 2025 budget for biodiversity conservation.

29 August 2024

DGFC attended the launch of Sabah Biodiversity Centre's Biodiversity Integrated Information System (SaBIIS) and provided data for the new system. SaBIIS is an online integrated information system for biodiversity monitoring.

21 November 2024

DGFC attended the stakeholder consultation workshop on phase II of WWF's Sabah Landscapes Programme. This programme aims to balance biodiversity conservation and sustainable development through a living landscapes approach.

Dr Milena Salgado Lynn in India

Further strengthening collaborations in the field of Asian elephant genetics, Milena attended a kick-off meeting held at the headquarters of the Wildlife Institute of India in Dehradun, Uttarakhand, for the Asian Elephant Genetics Project. The event marked an important milestone towards better conservation and management of Asian elephants through advanced genomics studies.

The project, sponsored by Rotterdam Zoo, aims to study population genetics and landscape connectivity of Asian elephants across their range. Central to this effort is the development of a unified panel of SNP markers that is very likely to standardize the genetic studies of these iconic animals.



Dr Reeta Sharma from Rotterdam Zoo and Dr Milena Salgado Lynn from DGFC

Key collaborators included researchers from Rotterdam Zoo, Wageningen University, Amity University, and the Sigur Nature Trust, among others.



Dr Milena presenting

Participants attended presentations, discussions, and field visits in Rajaji and Jim Corbett National Parks.

DGFC's involvement in this project underlined its long-standing commitment to wildlife research and conservation and provided a broad overview of work dealing with Bornean elephants.

Discussions, therefore, centred on sharing samples and testing the SNP panel at our Wildlife Health,

Genetic and Forensic Laboratory in Kota Kinabalu. Such collaboration would increase the resolution of Asian elephant phylogeny-for example, where Bornean and Sumatran elephants prove to be sisters-along with crucial information on population dynamics. The meeting also enabled the sharing of information and opportunities to network, and DGFC will co-author publications on Asian elephant phylogenomics and the development of SNP panels. Attendance at this meeting re-affirmed DGFC as a leading player in elephant conservation research and underlined the capacity of the Centre to provide relevant inputs in international collaboration and alignment with global goals for nature conservation.

DGFC EDUCATION TEAM ACTIVITIES

During 2024, DGFC's Education team organised a suite of education and outreach programmes, promoting both awareness in conservation and inspiring future

generations. Several major projects took place over the year that were directed towards environmental education through interactive and immersive experiences. These included the main initiatives, such as School Holiday Programme at the State Library in Kota Kinabalu, HONOR 2.0, WildQuest at Lok Kawi Wildlife Park, a Wild Weekend at the State Library, and the KIS Rainforest Workshop.

School Holiday Programme at the Library (February)



In collaboration with the Sabah State Library (Tanjung Aru, Penampang, and Kota Kinabalu branches), DGFC co-organized the “Let’s Go to the Library – School Holiday Programme”, bringing fun and interactive wildlife and conservation education to children aged 5 to 12. Themed around wildlife and climate change, the sessions encouraged kids to explore nature through books, crafts, and hands-on learning. They discovered land animals and their habitats, created DIY elephant bookmarks, and discussed ways to protect wildlife. In another session, the children learned about predator-prey relationships, examined animal skulls to identify herbivores, omnivores, and carnivores, and explored how animals survive in the wild. The final session focused on climate change, where children searched for books about rainforest, made mini baskets or purses from recycled materials, and learned about the importance of recycling and protecting nature.

HONOR 2.0 (May)

Funded by Orangutan Appeal UK, the HONOR 2.0 programme took 60 students and 21 teachers from 12 schools across Ranau, Tambunan, Nabawan, and Keningau on a 3-night, 4-day camp at Mahua Rainforest Paradise, Crocker Range Park. Organised by DGFC in collaboration with the Sabah Wildlife Department, Sabah Education Department, Orangutan Appeal UK, Pangolin Aware, Wildlife Rescue Unit, and Sabah Parks, the programme gave participants a deep dive into wildlife conservation, sustainability, and habitat protection. Students took part in birdwatching, camera trapping, and habitat studies, gaining hands-on experience in conservation. Wildlife Junior Rangers from SM St. Michael Sandakan shared their inspiring journey, showing how young people can make a difference. The programme ended with a special

moment—every student was officially appointed as a Wildlife Junior Ranger by the Sabah Wildlife Department, recognizing their commitment to protecting nature.



WildQuest: A Junior Explorer's Wildlife Adventure (September)



In September, WildQuest hosted a Junior Explorer's Wildlife Adventure which brought 79 young explorers to Lok Kawi Wildlife Park for an exciting day of conservation learning. Organized by DGFC and Lok Kawi Wildlife Park (Sabah Wildlife Department), the programme gave students a chance to discover endangered species,

explore wildlife habitats, and learn about animal behaviour. With support from conservation partners Wildlife Rescue Unit, Pangolin Aware, Seratu Aatai, Orangutan Appeal UK, Meraki Daat, Live2Learn and Wildlife Junior Ranger of SM St Micheal Sandakan, participants engaged in interactive activities and hands-on learning experiences. Despite a few weather challenges, the event was successful, with 92.3% of participants rating it as excellent.

KIS Rainforest Workshop (November)



In November 2024, DGFC brought the wonders of Sabah's rainforest to 20 young learners at Kinabalu International School (KIS) through a fun and interactive three-hour workshop. Children aged 6 to 7 years old explored the rainforest ecosystem, discovering its diverse plants and animals through engaging stories and hands-on activities. They learned about the conditions that help plants and animals thrive and discussed important issues like deforestation, climate change, and how human actions affect biodiversity.

A Wild Weekend at the Library – Wildlife Warriors: Protect Our Animal Friends (December)

As part of the School Holiday Programme, DGFC co-hosted Wild Weekend at the Library, a conservation-themed event designed for kindergarten and primary school children from various districts across Sabah's West Coast.

Through storytelling, arts and crafts, and interactive games, children learned about endangered wildlife in Sabah and why protecting nature matters.

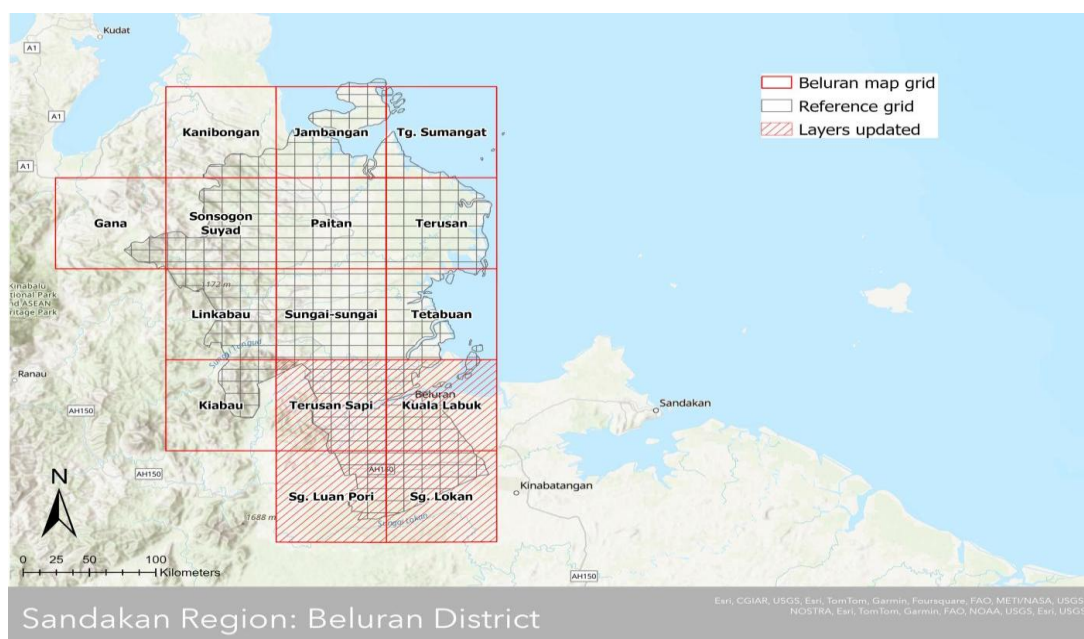


Educational booths and hands-on exhibits introduced them to animal adaptations, rainforest ecosystems, and the challenges wildlife face today. A wildlife-themed book scavenger hunt and activity stations encouraged kids to explore nature through books and creative tasks, sparking their curiosity and passion for the environment.

Yet again, 2024 saw DGFC's education and outreach programmes making a real and meaningful impact, connecting children, teachers, and the community with critical conservation issues. From hands-on workshops to interactive events, each programme helped foster a deeper appreciation for Sabah's wildlife and the environment. Moving forward, DGFC is committed to expanding its educational initiatives, ensuring even more people, especially young learners, are inspired to care for and protect nature through engaging and impactful programmes.

GEOGRAPHIC INFORMATION SYSTEM (GIS)

Throughout 2024, considerable progress was made in enhancing the geospatial information of forest and oil palm plantation cover along Sabah's east coast, focusing on the Kunak and Beluran districts. Spatial layers were painstakingly updated based on high-resolution satellite imagery combined with advanced tools such as NDVI and Hansen's layer of forest loss. The mapping exercise began in the Kunak district and later included Beluran, with coverage rising from 27% in July to 60%. New maps are now



offering more information on land use dynamics, which is vital for conservation and land use planning policy.

Associated with this geospatial work, continuous monitoring of Bornean elephant movements provided valuable information of habitat use and migration corridors. Using GPS collars, weekly tracking in key Kinabatangan, Tabin, and central Sabah landscapes revealed persistent movement patterns and behaviour.

Collaboration with international conservation forums saw DGFC contributing to a landmark workshop on elephant distribution mapping in Asia, hosted by the IUCN. These insights further strengthen regional understanding and fostered cross-border cooperation in elephant conservation.

In addition to mapping and monitoring, capacity building initiatives played an important role in ensuring the activities continued. A GIS basic training workshop, undertaken at DGFC's research Field Centre, provided students and professionals with the basic skills in QGIS, enabling our further contribution towards conservation science. Other activities included tick and mite distribution research, mapping of crocodile home ranges, and first aid for field safety. All these multi-dimensional endeavours serve to emphasise the integration of technology, research, and training in advancing conservation initiatives throughout the year.



DGFC: QGIS Introduction to Geographical Information System (GIS)

RESEARCH PROJECTS

• Regrow Borneo

Biodiversity Monitoring

Pre-planting biodiversity monitoring was carried out at four planting sites by 2024: Sungai Pin 1.0, Laab 3.0, Kaboi Lake 4.0, and Kaboi Stumping 3.0. Of these, Sungai Pin 1.0 and Laab 3.0 underwent a second round of biodiversity monitoring. Newly planted this year, the two other sites are scheduled for their second round of monitoring in 2025.

Furthermore, three restored sites—Kaboi Lake Restored (planted in 2003), Kaboi Stumping Restored (planted in 2007), and Laab Restored (planted in 2017)—also underwent biodiversity monitoring. Surveys include amphibian count, bird mistnetting, dung beetle sampling, small mammal trapping, camera trapping for medium-to-large mammals, and habitat assessments to better understand the relationship between animal assemblages and environmental variables.

These analyses provide information on the richness, diversity, and evenness of frogs, birds, and small mammals prior to the sites being prepared for planting. The biodiversity analyses give us a clearer picture of the diversity, balance, and number of species—birds, small mammals, and frogs—at the sites, based on data collected before planting began. Species Evenness is also considered, which indicates how balanced the populations of different species are.

The data so far highlights increasing trends in diversity, evenness, and richness across all taxa over the monitoring period. Birds can recolonise quickly because of their mobility, but their long-term diversity will depend on vegetation growth and consistent resources. Small mammals too are improving, but full recovery may take years when the habitat stabilises further. Frogs, on the other hand, are more sensitive to their environment and require specific environmental conditions, such as good water quality, sufficient vegetation cover, and stable microhabitats. The time needed to achieve these conditions could be the reason for their relatively slow recovery. Early restoration stages expose frogs to several stressors, such as temperature fluctuations and competition, which further hinders their progress.

Nonetheless, actively planted sites provide resources and environmental conditions that attract early successional habitat tolerant species, while restored sites offer stable and complex habitats for species that require long-term ecological continuity.

• Small carnivores

Ms Amanda Wilson, a Cardiff University PhD Student from Sabah, is studying how cats, particularly leopard cats and flat-headed cats, find refuge and whether they can tolerate human influences within their home range. Undertaking her study in the fragmented forests within the Lower Kinabatangan Wildlife Sanctuary provides an ideal landscape as DGFC has many oil palm plantations nearby.

During 2024, a series of tagged individuals, held a story:

- Garfield (LCM10): Satellite tracked for the first few months of this year, Garfield's data proved vital before a mortality signal was picked up in February.
- Naga (LCM12): This male leopard cat was collared in February, with his range extending across the borders of three oil palm estates.
- Uno (LCM14) and Santai (LCM15): Active over the mid-year, Uno and Santai gave a glimpse of the complex interaction between survival and predation within the plantation landscape. Unfortunately, Santai was found to have been killed by a predator in September.

- Putri (LCF03) and Ketua (LCM16): Their activity provided important data on leopard cat behaviour within two of the neighbouring oil palm estates.

From frequent downloads of data from the cats' GPS collars (essentially in real time) significant amounts of data regarding the cats' movement patterns, preferred sleeping sites, and territorial range was collected.



Leopard cat

Sleeping Site Analysis: Over 200 sleeping sites were assessed, which showed preferences for dense undergrowth near the edges of plantations. This information is crucial for conservation planning to ensure that such habitats are retained.

Camera Trap Surveys: Widespread camera trap surveys at oxbow lakes and plantations have confirmed the presence of leopard cats across fragmented landscapes, which also assists in estimating population densities.

Not all was easy, however, as the tracking of Garfield (LCM10) and Garuda (LCM13) was problematic due to the collar batteries depleting. More positively, innovations such as AI-enhanced camera trap monitoring were introduced, which greatly helped to improve detection and data processing.

Conservation is seldomly a singular effort, and this study is no exception with students and volunteers becoming indispensable in fieldwork activities, data analysis, and camera trap maintenance.

• Protecting the Bornean Banteng

The Bornean banteng (*Bos javanicus lowi*) is threatened by illegal hunting, habitat loss, and its interactions with domestic livestock which potentially puts it at risk through disease transmission and hybridization. In 2024, the banteng was listed as Critically Endangered on the IUCN Red List of Threatened Species.

Funded by Colombus Zoo, DGFC's Jonas De Lange and Dr. Mohamed Reza Bin Mohamed Tarmizi (Wildlife Veterinarian), began the ambitious task of understanding the different kinds of threats these posed to the species with the aim to provide vital data to inform ongoing conservation efforts.

This ongoing project focuses on the Tabin Wildlife Reserve, Kulamba Wildlife Reserve, and Sungai Segama Forest Reserve. These areas, linked by a tenuous forest corridor, support

the only recorded banteng on the east coast of Sabah where the presence of non-confined domestic cattle has raised concerns regarding hybridisation and inter-species disease transmission.

Field Work and Surveys

Work began in May 2023 with the team studying the interface between plantations and protected areas. They interviewed plantation workers and evaluated the status of the fences which were erected to separate both zones. This helped them to identify possible grazing areas where the wild and domestic species would frequent and where they could set up the camera traps.

Camera Trap Deployment

Fourteen camera traps were put in key locations across the site, since August 2023. Due to either the absence of or avoidance of the species towards the edges of plantations, no images of banteng were captured, whereas domestic cattle and water buffalo shared a lot of zones with high overlap. Camera recordings at the study sites included less common sightings such as lesser adjutant storks, hairy-nosed otters, silvered langurs, leopard cats, bearded pigs and elephants, which will provide DGFC with additional ecological data.

Sampling and Analysis

Blood samples from domestic cattle as well as opportunistic faecal samples collected from cattle, buffalo and banteng provided additional detail on the risk to and from these interspecies interactions.

Blood Sample Results

Blood samples collected from six Brahman x cross cattle were examined for the following parasites: trypanosomes, *Babesia* spp. and microfilariae which can be dangerous parasites in cattle, each causing specific diseases that can significantly impact cattle health and productivity. Fortunately, there were no detections.



Jonas De Lange setting up a camera trap in the landscape

Faecal Sample Results

Faecal samples of banteng and domestic livestock painted a rather more complex picture. Strongyle type nematodes were found in 77% of cattle and buffalo samples, and 80% of the banteng samples, but overall infection levels were low. Coccidia, tapeworms, and a *Trichuris* spp. egg were all present in banteng faeces, indicating a rather broader range of gastrointestinal parasites in wild cattle (banteng) than in domestic cattle.

Conservation Implications

The absence of banteng in the camera trap records could be a sign that these animals are retracting further into the forest to avoid human activity. Thus, although self-protective in the short run, reduces their grazing sites and makes them more vulnerable to habitat loss. Parasites can be transmitted when sharing grazing grounds, so it is important not to allow domestic cattle to roam freely and underlines further the importance of continued monitoring of disease transmission risks in shared landscapes.

The Way Forward

Future efforts will concentrate on expanding the study area, undertake more comprehensive sampling, and continue involving local communities and other stakeholders in reducing the impact of their domestic livestock by creating disease-free buffer zones.

• The Pangolin Project

The pangolin project is a collaboration between DGFC and Hong Kong University, investigating the role of Sunda pangolins (*Manis javanica*) in the emergence of SARS-CoV-2 and other viruses in humans.

This project involves pangolin captures and tracking to better understand their home ranges, behaviour as well as the other forest animals which share their sleeping sites and potentially share their viruses. Over the year 2024, several animals have been caught, collared and tracked (maximum of four individuals at a time) in the landscape, sleeping sites have been monitored using camera traps, and sampling sessions in the close vicinity of those sites have been carried out in order to address potential exchange of parasites/viruses between pangolin and other species (such as bats, rats, monitor lizard, small carnivores, etc) sharing the sleeping sites.

• Conservation Projects

2024 saw the award of a second grant from the U.S. government's International Narcotics and Law Enforcement Affairs, to support DGFC's collaborative efforts, in partnership with the Sabah Wildlife Department to fight wildlife crimes.

SHIELD (Sabah's Harmonized Intelligence Enforcement and Legal Defence Against Wildlife Crimes), is a collaborative approach designed to effectively protect Malaysia's unique wildlife.



Focussed on the State of Sabah, the program brings together multiple organisations to fight wildlife crimes. Through improved law enforcement, cross-agency cooperation, and specialised training, SHIELD aims to strengthen the capacity of local agencies to effectively detect, investigate, and prosecute these crimes.

This project brings together a diverse group of local and international partners, including:

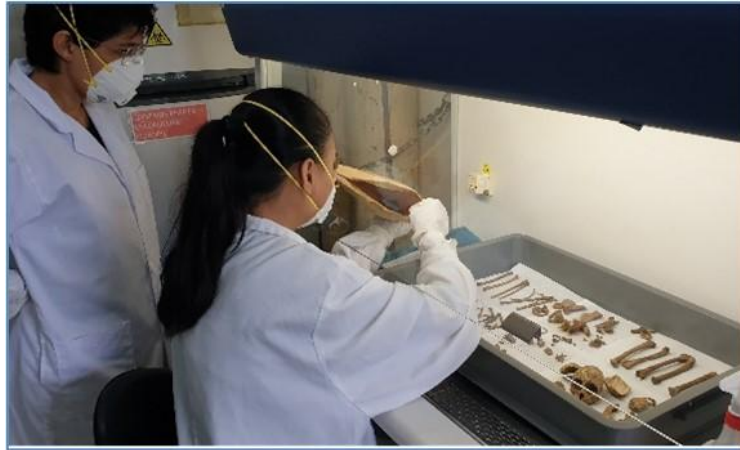
- The Danau Girang Field Centre
- The Sabah Wildlife Department
- WWF Malaysia
- TRACE The Wildlife Forensics Network
- Justice for Wildlife Malaysia
- Other Malaysian government, judicial bodies and international agencies

Meanwhile, the Rapid Response Team, established through a partnership between SWD, DGFC, and Yayasan Sime Darby, continued to strengthen SWD's ability to quickly respond to wildlife poaching, trafficking, and illegal trade in Sabah. Their covert operations on the ground resulted in 20 arrests and the collection and destruction of 22 animal snares in 2024.

SABAH WILDLIFE HEALTH, GENETIC AND FORENSIC LABORATORY

The Sabah Wildlife Health, Genetic, and Forensic Laboratory is a multidimensional facility specialising in forensic analysis. It undertakes analysis for our ongoing research projects and collaborates with external agencies to combat wildlife crime in support of DGFC's wildlife protection and conservation efforts.

The laboratory is equipped to handle such cases by utilising advanced techniques such as DNA extraction, PCR analysis, and gel electrophoresis. It also generates reports for criminal court cases and compiles forensic evidence for submission to the relevant authorities.



The team is also actively involved in providing training, and workshops to teach forensic analysis techniques to our external partners. These partners include government agencies, research institutions, and international organisations.

SCHOLARLY ACHIEVEMENTS

- Luke Davies (ex PTY cohort 2017-2018) graduated in 2024 from Cardiff University for his PhD entitled: Evolution and Recent Adaptation of the Domestic Water Buffalo. (Main supervisor: Dr Pablo Orozco-terWengel, second supervisor: Prof Benoit Goossens).
- Elizabeth Rice (MSc Global Ecology and Conservation, Cardiff University) graduated in 2024. Project: Camera trap analysis of terrestrial movement of arboreal primates on a wildlife corridor in the Lower Kinabatangan Wildlife Sanctuary, Sabah, Malaysia. (Supervisor: Prof Benoit Goossens).

AWARDS

Adjunct Professor at University of Wyoming

October 2024 saw our Director, Benoit Goossens appointed as Adjunct Faculty Professor at the University of Wyoming's Haub School of Environment and Natural Resources. This award will further strengthen DGFC's valued partnership and ongoing collaborations with the University of Wyoming.

PUBLICATIONS (DGFC authors in bold)

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IN THE PRESS 2024

1. Science paper on African swine fever (19 January 2024)



[‘The pigs have disappeared’: swine fever threatens food source for millions as disease hits wild herds](https://www.theguardian.com/science/2024/jan/19/african-swine-fever-threatens-food-source-for-millions-as-disease-hits-wild-herds)

Scientists call for urgent intervention, as bearded pig populations are devastated by the deadly virus on islands such as Borneo

www.theguardian.com



[Pay serious attention to African Swine Fever, urge wildlife experts](https://www.thestar.com.my/news/2024/01/19/pay-serious-attention-to-african-swine-fever-urge-wildlife-experts)

KOTA KINABALU: The African Swine Fever (ASF) is not getting enough attention despite the disease having decimated the domestic and wild pigs population in Asia, Europe, and Africa, say wildlife...

www.thestar.com.my



[Experts: Drastic drop in pig population due to ASF affects Borneo’s indigenous communities - Borneo Post Online](https://www.theborneopost.com/2024/01/19/experts-drastic-drop-in-pig-population-due-to-asf-affects-borneos-indigenous-communities/)

KOTA KINABALU (Jan 19): The African Swine Fever (ASF) is devastatingly affecting Sabah and Sarawak by threatening food security for indigenous communities, the natural ecosystem, and the wildlife...

www.theborneopost.com

2. Conservation Letters paper on field stations' conservation value (5-6 March 2024)



[Biological field stations deliver high return on investment for conservation, study finds](#)

Field stations provide many overlooked benefits and a significant return on investment for conservation, according to a new study authored by 173 conservation researchers.

news.mongabay.com



[Cutting research station funding will hurt conservation efforts, scientists say - The Star](#)

KOTA KINABALU: Reduced funding for field conservation research stations worldwide is causing concern among researchers and scientists.

www.thestar.com.my



[KOTA KINABALU: Funding for field conservation research stations worldwide have been drastically reduced](#) since the beginning of the Covid-19 pandemic.

There are 157 field stations in 56 countries, and two of them, which are run by non-governmental organisations Danau Girang Field Centre (DGFC) and HUTAN are in Sabah.

www.nst.com.my

3. Pangolin paper in Global Ecology and Conservation (12-13 May 2024)



[Urgent sanctuary, strategies needed in Sabah for pangolin protection, study finds - The Star](#)

KOTA KINABALU: Sabah's forests are ideal sanctuary for the endangered Sunda pangolin (*Manis javanica*) but there is an urgent need for protection strategies for the mammals, according to a study...

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[Pangolin needs urgent protection - The Star](#)

KOTA KINABALU: Sabah's forests are an ideal sanctuary for the endangered Sunda pangolin (*Manis javanica*), but there is an urgent need for protection strategies for the mammals, according to a...

www.thestar.com.my

4. HONOR 2.0 (28 May 2024)



[Sabah students learn about conservation through Honor outreach programme - The Star](#)

KOTA KINABALU: Over 80 students and teachers underwent conservation awareness activities under the Honour Our Nature outreach programme (Honor).

www.thestar.com.my

5. Banteng uplisted to critically endangered (29 October 2024)



[Sabah's banteng now critically endangered | The Star](#)

KOTA KINABALU: After the Bornean pygmy elephant, another of Sabah's iconic wildlife species is in urgent need of protection after the banteng or native cattle was listed as critically endangered...

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[Sabah's iconic banteng flagged as critically endangered | New Straits Times](#)

Sabah's iconic banteng flagged as critically endangered | New Straits Times

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A photograph of a large elephant standing in a grassy field at night. The elephant is illuminated by a bright light source, possibly a spotlight, which creates a strong contrast with the dark background. The elephant is facing left, and its trunk is visible. The surrounding area is dark, with some foliage and trees visible in the background.

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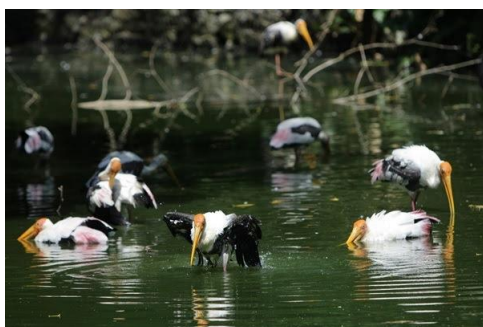


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[Extra RM6.9 million from United States to fight Sabah wildlife crime](#)

Kota Kinabalu: The United States Department of State's Bureau of International Narcotics and Law Enforcement Affairs (INL) has injected more money to fight wildlife crime in Sabah.

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GRANTS AWARDED 2024

1. Orangutan Appeal UK for the project "HONOR our Nature Outreach Programme 2.0", 1 year (May 2024 to April 2025):
MYR 45,755 (GBP 8,331).
2. Panthera Corporation for the project "Ecology of small sympatric felids in the fragmented landscape of the Kinabatangan Wildlife Sanctuary", 1 year (June 2024 to May 2025):
MYR 25,850 (GBP 4,707).
3. Orangutan Appeal UK for Regrow Borneo project, 1 year (September 2024 to August 2025):
MYR 55,020 (GBP 10,000).
4. A Tree for You for the project "Malaysia/Borneo: reforestation with local communities in the Kinabatangan Sanctuary", 3 years (August 2024 to December 2027):
MYR 544,238 (GBP 99,096).
5. US Department of State for the project "SHIELD: Sabah's Harmonized Intelligence, Enforcement and Legal Defense Against Wildlife Crimes", 2 years (1 October 2024 to 30 September 2026):
MYR 6,449,861 (GBP 1,174,223).
6. The British Council for the project "Reducing impacts on elephants from construction of the Pan-Borneo Highway in Sabah", 2 years (1 December 2024 to 30 November 2026):
MYR 437,631 (GBP 79,685).
7. Yayasan Hasanah for the project "Reducing impacts on elephants from construction of the Pan-Borneo Highway in North Kinabatangan" in collaboration with Seratu Aatai, 18 months (1 December 2024 to 30 June 2026):
MYR 485,583 (GBP 88,416).

Total MYR 7,998,183 (GBP 1,464,458)

ACKNOWLEDGEMENTS

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If you would like to learn more about how you can help support DGFC, please email us at enquiry@danaugirang.com.my