Final Evaluation Report

Your Details	
Full Name	Jo Leen Yap
Project Title	Langur Project Penang: Conservation of Dusky Langurs in Malaysia Through Research, Canopy Bridges and Environmental Education
Application ID	33683-B
Date of this Report	13th September 2023

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
To initiate research on seed dispersal and ecosystem services role of dusky langurs in different habitat types in Malaysia.				I am currently working with an Engineering postgraduate student, from the School of Mechanical Engineering at Universiti Sains Malaysia, on his Master thesis titled "Monkey Face Recognition in Changing Climates: Data-Driven Insights into Behaviour and Physiology". I am one of the supervisors for this student. These approaches will help us to further utilise AI and engineering to assist field assistants in data collection and improve the current methodology of behaviour studies, especially on Asian primate species of leaf monkeys and macaques. I'm encouraging the student to apply for the 1st Rufford Grant to support his research, where he is starting by end of 2023. Regarding the seed dispersal and ecosystem services role of dusky langurs in different habitat types in Malaysia - Unfortunately, due to COVID, there were some challenges in recruiting a student to work on a Master's thesis on the seed dispersal and ecosystem services roles. This was due to the uncertainty of the future for students, as well as changes in standard operating procedures at the university and field sites. However, we have begun the phenology survey back in 2021 and are still in the process of building up the plant inventory and

				phenology study at three study sites in Malaysia (Teluk Bahang, Tanjung Bungah, and Bukit Mertajam). We are using the phenology data to monitor the dusky langurs' long-term activity and behaviour, and we are engaging with community scientists to collect food plant observation data when the dusky langurs are seen in the neighbourhood. Despite the challenges, the Rufford 1st Booster Grant was well utilised for the fieldwork expenses of volunteers and undergraduate students in collecting data on plant inventory and phenology in Penang. I am still very open to working with postgraduate students who are interested in the seed dispersal role of dusky langurs and plant phenology at the selected field sites. I sincerely hope that I will be able to identify an individual who is interested in taking up the topic of seed dispersal and ecosystem services roles soon, when there is sufficient support from the student's university, and they are able to successfully secure a research permit for this study.
To kick-start the second road canopy bridge in Malaysia				A second bridge prototype 'double twisted liana' was installed on the existing road canopy bridge 'single twisted liana' in August 2020, to improve the bridge design while also comparing the effectiveness of animals crossing on two bridge designs. Between March 2019 and May 2021, 2,128 animal crosses involving three mammal species were documented. Plantain squirrels crossed the bridge the most (2,075 times), followed by long-tailed macaques (32 times), and dusky langurs (21 times). The data is published on Folia Primatologica:

				"Ah Lai's Crossing" – Malaysia's first artificial road canopy bridge to facilitate safer arboreal wildlife crossings in: Folia Primatologica Volume 93 Issue 3-6 (2022) (brill.com) This project in Peninsular Malaysia aims to alleviate the impact of habitat fragmentation on urban wildlife, while also serving as a low-cost technique of reducing human-nature collisions on the road. Our findings give critical information in the form of photographs, films, and statistical presentations for environmental education and planning. However, further research is needed, particularly on the canopy bridge's long-term performance, which should be compared to wildlife's cable wire crossing and road runner crossing behaviour. We've used the data to develop public education programmes to highlight the importance of habitat connectivity, as well as contribute to the bridge installation process with other Malaysian conservationists and researchers working on canopy bridge projects in their respective species and sites. We are currently working on the next phase of the road canopy bridge project, aims to reduce roadkill incidents of arboreal wildlife in Penang and to work with the community to develop a management plan and recommendations for potential humane and sustainable approaches to mitigate negative human-primate interactions in Penang.

Environmental Education and community engagement of Langur Project Penang				We made good use of our time and productivity during the period of movement restrictions by converting our environmental education (EE) content to online platforms rather than offline platforms. With adequate social distancing SOP, we have performed nineteen online workshops and online seminars, two rainforest programmes, and six on-site roadshows and events in public spaces. In the year 2021, we were able to recruit ten volunteers to help with not only fieldwork but also the creation of creative material. We maintain a good network with residents in Penang to collect dusky langur sighting data using a social media platform for community engagement in citizen science-based research. Residents in Penang reported seeing dusky langurs 154 times in urban areas and 42 times in natural areas such as recreational parks in the year 2021. This citizen science-based online research is still ongoing to assist us discover prospective dusky langur urban hotspots in preparation for future canopy bridge installation and educational campaigns. The EE component of LPP has been submitted as a case study to GEEP and NAAEE as part of the international case study publishing series, which is scheduled for publication in the second half of the year: Case Studies | Global Environmental Education Partnership (GEEP) (thegeep.org) Update in September 2023: Langur Project Penang (LPP) is a platform for community members to learn about the importance of safeguarding primate habitat and to participate in primate ecology and

				behaviour studies. Our education programmes, such as the rainforest programmes, are designed to educate the community about the importance of intact forest habitat, encourage the public to become involved in wildlife conservation volunteerism, provide opportunities for family and social bonding activities, and inspire community members to take progressive conservation actions. We utilise a participatory approach to raise awareness of dusky langur's movements in urban areas and advocate to authorities and stakeholders the need for environmental education (EE) and road canopy bridges. Our team works with local communities, government agencies, and businesses to raise awareness of the dusky langur and the threats they face. We make EE accessible by bridging urban and nature through various science communication methods such as animation, storybooks, community outreach, and virtual education programmes. We use a variety of methods to reach different audiences, including young students, university students, and adults. Our science communication methods are designed to be engaging and informative, and to help people understand the importance of conservation. My team and I at Langur Project Penang (LPP) have organized 78 educational events between November 2021 and 11 September

				2023, reaching an estimated audience of 1809 adults and 1497 children. Although we did not initially plan to assess the success of our environmental education (EE) programs quantitatively, we did collect qualitative data such as participant feedback, artwork, and an ethnography survey of residents living in primate habitat neighbourhoods near our field sites. Environmental education has enabled Langur Project Penang (LPP) to inspire primate conservation action among community members through citizen science manpower. As of August 2022, LPP has recruited 90 volunteers/citizen scientists of various age ranges and demographics. Of these, 29% have re-volunteered after their initial participation as short-term volunteers, interns, or university students. One of the most important factors in encouraging volunteerism is to maintain and nurture relationships among team members. Mentor-mentee relationships are one way to help encourage and sustain volunteerism. This is a continuous learning process in which working relationships can be further enhanced into friendships and partnerships. The majority of LPP citizen scientists are undergraduate students, accounting for 58% of all LPP citizen scientists as of August 2022.
Publications and project milestones				I had been invited to present about the research, road canopy bridge, and environmental education parts of the work in three international

				virtual conferences in the year 2021 as the head of Langur Project Penang: 1) Taiwan Environmental Education Forum 2021 by New-generation Environmental Education Development (NEED) ; 2) Asia Pacific Virtual Environmental Education Forum 2021 by Global Environmental Education Partnership (GEEP) ; 3) 3rd August Road Ecology , Transportation Infrastructure & Wildlife Conservation Virtual Zoom Conference 2021 by The Association of Consulting Engineers Malaysia (ACEM). The results of the road canopy bridge have been submitted to Folia Primatologica Journal for publication and were accepted and published. The Rufford Foundation is credited with funding the fieldwork research and bridge installation. Finally, in February 2022, I submitted my PhD dissertation. I sincerely hope that my thesis, titled "Behavioural Ecology and Conservation Management of Dusky Langurs (*Trachypithecus obscurus*) in Penang, Malaysia," will serve as a guideline for future conservation efforts of dusky langurs (and other species) in Malaysia and beyond, by laying out the scope of data required to draught and implement feasible conservation actions. The ultimate goal, which is beyond the scope of this thesis, is to create a multilingual, open-access working document known as the Dusky Langur Conservation Plan, which will be presented to key stakeholders and will reference the important conservation actions and rationales outlined in this thesis in order to better protect this endangered

				species from future threats such as habitat loss and illegal pet trade. I successfully defended my dissertation in July 2022 and received my Doctorate in December 2022. I'm a part of the local organising team for the upcoming International Primatological Society Congress in Kuching, Sarawak, in August 2023. I will participate as a panellist in a roundtable discussion about Malaysian Primates, present at one of the symposiums about road canopy bridges and have one LPP student present about our project's environmental education component.

2. Describe the three most important outcomes of your project.

a). Research

Despite the pandemic and restrictions on movement in Malaysia, we were able to adapt to the situation and begin new research collaborations. We began a citizen science-based urban wildlife sighting initiative to collect data on dusky langur and other urban wildlife via social media (see question 4 below). In addition, we were working with Dr. Cedric Tan (Nottingham University Malaysia) and Nyein Zaw Ko (Nature Advocacy) on an assessment of the most common species sighted by Malaysian social media users. We'd want to deduce the habitat range and document sighting records of rare and endangered animals in Malaysia based on these social media posts.

Langur Project Penang's ecology and behaviour fieldwork was hampered by Malaysia's movement control order (MCO), but it has since recovered in 2022, and we are already back in the field to resume the behavioural ecology research of the dusky langurs, as well as a long-term activity and behaviour monitoring study of habituated dusky langur groups.

For 2023, we are starting new projects on developing management plan and recommendations for potential humane and sustainable approaches to mitigate negative human-primate interactions in Penang.

b). Road Canopy Bridge

Due to a lack of accessibility between districts and states, as well as a lack of volunteers, we were unable to install a new bridge in a new place during the movement control order (MCO), where we require constant fieldwork to gather

data at possible canopy bridge sites. However, we were able to identify several suitable areas in Penang where a road canopy bridge would be needed to assist primates and rodents to crossroad safely.

Furthermore, the Rufford Foundation's financing enabled us to upgrade the first canopy bridge design to a second prototype design that included the installation of a solar panel to power the camera trap. The second prototype allows us to compare wildlife crossings and allows us to investigate ways to improve the canopy bridge structure. The research data has been published in Folia Primatologica, and we are currently planning a new canopy bridge for 2023.

c). Environmental Education

Although on-line environmental education has many advantages, it also has some drawbacks, such as the difficulty of providing participants with 5 senses experiences and having face-to-face conversation. In many parts of the world. However, the movement control order (MCO) and global lockdown situation allowed us to put our creative skills to work on virtual educational programmes. We've run a number of national and international virtual programmes where people from all around Malaysia and the world may connect with one another, rather than just communities in the same state or country. Onsite environmental teaching restarted in 2022, when we were able to cooperate with other conservation organisations such as the Penang Green Council, Tour Guide Association, National & International Schools, and Corporations to host education events about Malaysian primates and rainforests.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

COVID-19 was the most significant issue encountered during the project, and it had an influence on recruiting volunteers, initiating new projects, and conducting on-site fieldwork and environmental education activities. My team and I anticipated early challenges such as the implementation of the movement control order (MCO) and a lack of volunteers when applying for the Rufford Booster Grant, and we were confident that many parts of the projects could still be completed because fieldwork sites were not affected in the early stages of the MCO. Unfortunately, two of our fieldwork sites had an impact on the order in which recreational forest areas in Malaysia were closed.

In the year 2021, MCO processes altered in response to the increased number of COVID cases, and residents were hesitant to participate in outdoor group programmes (such as our environmental education forest programmes), and our volunteers were hesitant to perform fieldwork. Fortunately, things have improved, and Malaysia has no plans to issue another MCO.

The year 2022 was a great bounce-back year for LPP, where we managed to resume the long-term fieldwork in the study sites, recruit more members to be trained as community scientists for engagement and environmental education.

4. Describe the involvement of local communities and how they have benefitted from the project.

We use the WhatsApp, Facebook, and Instagram social media platforms to communicate with citizens in Penang and Peninsula Malaysia (during and after the movement control order) about citizen sightings of dusky langurs and other urban wildlife such as snakes, wild pigs, monitor lizards, and more. We have received 228 reports of dusky langur sightings and 89 reports of other urban wildlife species sightings in Peninsula Malaysia as of February 2022. (Data collected between Feb 2020 to Feb 2022).

Residents expressed their gratitude for our study because they recognise the value of submitting sighting data for conservation planning. Residents were able to learn from our team members about how to handle situations like dusky langur and long-tailed macaque sightings, and they were able to put their knowledge to good use to help their family and friends.

The new project in 2023 aims to reduce roadkill incidents of arboreal wildlife in Penang and to work with the community to develop a management plan and recommendations for potential humane and sustainable approaches to mitigate negative human-primate interactions in Penang for the upcoming new project of installing new road canopy bridge. We have begun engaging with the targeted human-monkey contact neighbourhood areas and are now conducting preliminary surveys and planning for potential canopy bridge installation sites, as well as minimising negative human-monkey interaction in Penang, Malaysia.

5. Are there any plans to continue this work?

Without a doubt. Langur Project Penang (LPP) will continue for the foreseeable future, with the goal of becoming a self-sustaining social enterprise while collaborating with the Malaysian Primatological Society (MPS) and institutions on research collaboration and collaborations. LPP intends to expand its environmental education (EE) services to include a variety of packages that may be used to promote corporate social responsibility (CSR) as well as instructional packages for local and foreign schools. We will be able to continue LPP in the long run and have a stronger influence on the communities if we do so. I aim to continue working with The Rufford Foundation to develop LPP into a mature and sustainable conservation organisation in which Malaysians of all demographics can participate.

6. How do you plan to share the results of your work with others?

Langur Project Penang's work has been featured in a variety of print and electronic media venues. Besides scientific publications, I am looking forward to leading my team in sharing the results of our work and the storey of dusky langurs in a variety of creative formats, such as music, videos, and storybooks, where we have already produced a number of high-quality videos on our YouTube channel, a children's song, and a children's illustration storybook. Our field research is still ongoing, and we plan to publish the results of our findings in peer-reviewed journals.

7. Looking ahead, what do you feel are the important next steps?

The important next steps are to:

1) keep the momentum of the research going, by recruiting more field volunteers to continue our consistent monitoring of the habituated groups of dusky langurs, and plan for permits to establish new research topics.

2) approach more schools/institutions/companies/small businesses to collaborate on Langur Project Penang educational programmes and CSR activities, to make conservation a part of the organization's SDG goals (15:Life on Land).

3) Continue to make strong progress on the 2023 new project of erecting a new canopy bridge and collaborate with residents in the human-monkey interaction neighbourhood area to develop a management plan for human-monkey coexistence.

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

Yes, The Rufford Foundation logo is displayed on our official website (www.langurprojectpenang), and mentioned in my PhD dissertation as main funder, as well as acknowledged in two publications of Langur Project Penang research work:

a) Yap et al. (2019). Activities, Habitat Use and Diet of Wild Dusky Langurs, (Trachypithecus obscurus) In Different Habitat Types in Penang, Malaysia. (Accepted & Published).

b) Yap et al. (2019). Malaysia's first artificial road canopy bridge to facilitate safer arboreal wildlife crossings (Accepted & Published).

The updated results of the canopy bridge project were presented at the IPS-MPS' 23rd Joint Meeting of the International Primatological Society and the Malaysian Primatological Society, which took place from 19th to 25th August 2023. (The logo of The Rufford Foundation was displayed on the presentation deck cover)

9. Provide a full list of all the members of your team and their role in the project.

Founder and Head: **Jo Leen Yap (myself)**

Project Assistant: **Lee Joey**

Environmental Educator: **Hoon Cheng Teo, Hui Yi Wong**

Field Assistant: **Victor Ng, Ko Jia Liang, Daniel Zul, Lee Khai Xian**

Volunteer Engineer: **Vikneswaran Muniandy**

* The above individuals are the long-term team members. We have many interns and volunteers from various institutions who have joined us as volunteers throughout the year, thus the complete list of volunteers is available upon request.

10. Any other comments?

I am proud of my team and myself for overcoming the hurdles in 2020-2022. The experience has broadened our horizons, and I am excited to continue working on the Langur Project in Penang. The Rufford Foundation was the first foundation to believe in my vision and work, and I am grateful that the foundation has continue to support Langur Project Penang and provide us with numerous opportunities, including entrusting me with hosting The Rufford Foundation Conference 2020 in Penang. I truly hope that The Rufford Foundation will continue to support our initiative, which aims to have a long-term positive impact and change for wildlife and local people by promoting coexistence among humans and wildlife through research, conservation, and environmental education.

Update in September 2023:

Langur Project Penang (LPP) is currently conducting three ongoing conservation projects, which are:

1. Project 'Ah Lai's Crossing': Ongoing monitoring and fieldwork of the focal dusky langur groups in Teluk Bahang, Penang. This project is essential to track the population status and behaviour of dusky langurs in the area. The data collected will be used to inform conservation decisions and for environmental education (Project started in 2016 and is still on-going).

2. Project 'Coexistence For All': Behaviour and ecology study on a group of feeding provision long-tailed macaques and community engagement to foster human-macaques interaction in Cherok Tokun, Bukit Mertajam. This project aims to understand the behaviour and ecology of long-tailed macaques in an urban setting. The project also engages with the local community to raise awareness of the importance of macaque conservation and to foster positive human-macaque interactions (Project started in August 2023).

3. Project 'Bridge to Coexist': This project will establish a new canopy bridge in Tanjung Bungah, Penang, with the support of the community and stakeholders. The bridge will provide a safe crossing for dusky langurs, helping to reduce human-urban monkey conflict. It will also be an educational resource for the public, raising awareness of dusky langurs and their conservation needs (Project started in March 2023, on-going until 2025)

The three projects are currently partially supported by the CIMB Islamic Conservation Grant and Animal Protection Denmark. I am interested in applying for the Rufford 2nd Booster Grant to co-fund Langur Project Penang to progress sustainably for the next two years.

Highlights about Langur Project Penang (LPP):

A story of dusky langur: https://youtu.be/JJzWfCn6fpI

The Star Golden Heart Award: https://youtu.be/sIKY2rCRna8

TEDx Talk: https://youtu.be/JkbxDptZ_Os (Mandarin)

News articles:
https://www.csmonitor.com/World/Asia-South-Central/2022/0405/Roads-broke-up-an-endangered-monkey-s-habitat.-Can-bridges-fix-it

https://www.thestar.com.my/metro/metro-news/2019/03/25/giving-wildlife-a-helping-hand

https://www.buletinmutiara.com/ah-lais-crossing-makes-a-difference-to-the-survival-of-endangered-langurs-and-other-creatures/

https://www.atlasobscura.com/articles/langur-wildlife-crossings-malaysia

https://www.thestar.com.my/metro/metro-news/2023/02/15/a-trail-less-travelled

ANNEX – Financial Report

Your Details	
Full Name	
Project Title	
Application ID	

Using the budget provided with your original application, please give a breakdown of budgeted versus actual expenditure. If there is a difference between the budgeted and actual amounts, please explain why.

If there are funds remaining, these should be returned to the foundation. We will provide details of how this can be done.

It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

All figures should be given in pound sterling, indicating the local exchange rate used.

Item	Budgeted amount as shown in your original application	Actual amount spent	Difference	Comments
TOTAL				

EXCHANGE RATE USED: