

Final Evaluation Report

We ask all grant recipients to complete a project evaluation that helps us to gauge the success of your project. This must be sent in **MS Word and not PDF format**. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Complete the form in English and be as concise as you can. Note that the information may be edited before posting on our website.

Please email this report to jane@rufford.org.

Your Details	
Full Name	Pang Yi-Heng
Project Title	Population densities of agile gibbon (<i>Hylobates agilis</i>) and their relationship with habitat characteristics in the Ulu Muda Forest Reserve, Kedah, Malaysia
Application ID	26530-1
Email Address	ethanpang91@gmail.com
Date of this Report	19 Feb 2026

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
Produce a recent population account of <i>Hylobates agilis</i> in a high conservation value landscape (Ulu Muda Forest Reserve)			✓	
Education outreach to schools focusing on introducing gibbons and their threats, as well as call of actions			✓	Managed to reach out to schools, education communities in the following states in Malaysia: Penang, Perak and Johor.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.

There were situations in which some field assistants developed health issues and could not carry out field work for the rest of the trips. For example, an assistant had a sudden kidney stone attack, and another volunteer had to be stationed in his post alone (usually two persons at a post). I included more assistants in the following trips so that there'll always be a backup, which was proven useful as one of the assistants who arrived from aboard and did not have time to acclimatise to our climate, and then had to be send out of the field immediately as sickness developed.

There was one time when the entire team of the field assistants pulled out one week prior to the scheduled field trip and I had to replace it with sub-par field assistants. I mitigated it by interviewing the applicants to understand their personality, which minimised unwanted incidents.

Environmental education outreach programmes that focus on primates of Malaysia and gibbons were hampered during the pandemic. Nevertheless, I have participated a number of online sharing sessions, reaching out to schools and education communities.

3. Briefly describe the three most important outcomes of your project.

The project has resulted in the estimation of population abundance and density of *Hylobates agilis* in one of the most important landscapes in the northern region of Peninsular Malaysia – Ulu Muda. The last time such a population study of small apes in Peninsular Malaysia was done was in the 1980s. Our data suggest that there are $2,972 \pm 102$ groups of *Hylobates agilis* in areas within Ulu Muda that lie below 450m above

sea level. This is evidence that the relatively large and undisturbed landscape could be the last safe haven of the species on mainland Asia, and also an important area rich in biodiversity but yet to receive a higher protection status (even at the time of writing this report the area is not protected).

We also found that the group density of *Hylobates agilis* is slightly higher in recently logged forest compared to undisturbed forest of Ulu Muda. This translates to the conservation value of secondary forests surrounding a primary forest that should not be ignored and be included into the protection plan draft of the area.

In my educational outreach programs, I have also realised that small apes, though charismatic enough and ecologically important, have received lesser attention than other primates in the country (for example, long-tailed macaque and orangutan). I managed to introduce this group of animals to students and demonstrated how important intact forest is to the animal, as well as to us. I have also learned that the gamification of an education program can be a powerful tool to help students maintain focus for a longer period of time, but also gain a deep understanding on the topic as they get to apply what they have learned in the game.

Education programmes and public talks my team and I have conducted during the grant period:

1. Beacon Learning Centre, Penang, Malaysia – 20 March 2019
2. Dalat International School, Penang, Malaysia – 28 March 2019
3. Convent Green Lane, Penang, Malaysia – 22 April 2019
4. The Boys' Brigade 1st Kluang Company, Johor, Malaysia – 26 May 2019
5. Tenby International School, Penang, Malaysia – 24 June 2019
6. Pocket Talk by Water Watch Penang – 17 June 2020
7. The Boys' Brigade 1st Kluang Company, Johor, Malaysia (online) – 4 July 2020
8. Sharing at Kluang Days, Johor, Malaysia – 29 Oct 2022
9. Tenby International School, Ipoh, Malaysia – 30 January 2023
10. Sharing at Ruang Kongsi, Penang, Malaysia – 3 February 2023
11. Sharing at SWIFT Offices, Kuala Lumpur, Malaysia – 16 February 2023
12. Prince of Wales Island International School - 26 May 2023
13. Collaboration with Nature Classroom, Perak Malaysia - 2 & 3 June 2023
14. The Boys' Brigade companies in Johor, Malaysia – 29 & 30 June 2023
15. Collaboration with Nature Classroom, Perak Malaysia - 16 & 17 September 2023
16. Collaboration with Nature Classroom, Perak Malaysia - 1 & 2 March 2024
17. Tenby International School, Ipoh, Malaysia – 26 & 27 June 2024
18. Collaboration with Into The Woods, Johor, Malaysia – 22 & 23 February 2025
19. Collaboration with Into The Woods, Johor, Malaysia – 15 & 16 March 2025
20. Launching of Yoyo *The Gibbon* and public talk during Earth Fest 2025, George Town, Penang, Malaysia – 3 & 4 October 2025

4. What do you consider to be the most significant achievement of this work?

The population abundance of *Hylobates agilis* in Ulu Muda has provided integral data for the upcoming IUCN National Action Plan for Small Apes Conservation in Malaysia.

The insight that I have gained during my research has enabled me to raise awareness among general public via public talks and environmental education programmes.

5. Briefly describe the involvement of local communities and how they have benefitted from the project.

The local boatmen in Ulu Muda have participated in this project, not just by chartering the team in and out of the forest, but they also provided forest guiding and served as cooks. A great part of the project budget has been contributed to their livelihood, which serves as an incentive for them to protect the landscape from degradation through their ongoing eco-tourism activities.

The two significant environmental education partners that I have worked with are Nature Classroom and Into The Woods, both of which have established a communities of parents and their children whom attend their programmes frequently. I co-organised a number of outreach programmes with them, focusing the story of the tropical rainforest, primates of Malaysia and the story of gibbons, a topic which the collaborators and their students benefited from my expertise.

It is Nature Classroom whom I have collaborated with for the publication of *Yoyo The Gibbon*, a children's picture book on gibbons and other Malaysian primates. It was officially launched on 3 Oct 2025 during Earth Fest 2025 at George Town, Penang. I was also invited as one of the panellist who talked about primate conservation during the festival. The book is now being sold on selected bookstores and via Malaysian Primatological Society, the latter which the proceedings will be utilised for promoting primate research and outreach programmes.

6. Are there any plans to continue this work?

Though is currently no further plan on continuing the work in Ulu Muda, opportunity of establishing a canopy bridge for gibbon may arise in the near future. If all things are working in favour, I may be able to continue my PhD in working on this research.

Meanwhile, I will still be organising environmental education programmes, as well as being available for public talks to raise awareness on Malaysia's primate and especially gibbons, either at my personal capacity or supported by Malaysian Primatological Society.

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

I have published an article on American Journal of Primatology and it available as open access publication to the public.

<https://onlinelibrary.wiley.com/doi/10.1002/ajp.23388>

I have also been invited to give a public talk at Sunda Shelves, an independent bookstore on natural history on 26 October 2025, to share my insight on gibbon's habitat in Peninsular Malaysia.

<https://www.facebook.com/share/p/1B5mWbMrrU/>

8. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?

The grant was used in the field work of mid-2018 and early 2019. Data analysis, writing thesis, examination, writing manuscript and eventually publication was done from 2019 to 2022. The latter part was much longer than I have anticipated.

From 2019 to 2025, I have utilised the grant to travel interstate a number of times to conduct environmental education outreach programmes. I have worked with youth uniform bodies, collaborating with other environmental education partners, visited schools.

9. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. 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.

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

The next step shall be advocating the protection of Ulu Muda. I and my team and supervisor have participated in round table discussions and workshops that work towards the protection of the landscape and presented evidence of it being the utmost important habitat for *Hylobates agilis* in mainland Asia.

Personally, I feel this survey must be repeated in every viable small ape habitat left in Malaysia. Currently, we have less than half of the land cover remaining as forest cover, and although we are not losing as many forests as in 1960s to 1990s, land conversion still happens, jeopardising the biodiversity and the indigenous people who depend on it.

11. 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 logo was used when I present my findings in physical meetings/workshops/outreach as well as online. I mentioned Rufford Foundation being the major funder in my published article.

12. Please provide a full list of all the members of your team and briefly what was their role in the project.

The full list of the field assistants is as below:

Given name	Surname
Adilah Suhailin	Kamaruzaman
Alex See-Yong	Lim
Amelia	Catterick-Stoll
Anis Amirah	Shaari

Ashley Zhen-Si	Lim
Cheng-Hock	Lee
Diana Marlana	Mohd Idris
Farah Fatini	Mat Daud
Fiona Gui-Xiang	Wong
Jasmine Sui-Ling	Wee
Jason Kevin	Nicholas
Joan Wan-Jia	Lee
Kheng-Wooi	Khor
Laura	Tammiste
Nu Hong Phuong	Le
Lhavanya	Dharmalingam
Meng-Hao	Mok
Milan	Pietracatella
Mohammad Naufal	Mohammad Shah
Mohd Azrul	Nik Faizal
Mohd Farhan Aizat	Johamin
Mohd Najib	Alias
Muhammad Ariff	Rahmat
Nasuha	Abdul Aziz
Nor Afiza	Abdul Rahman
Nur Fazne	Ibrahim
Nurul Balqis	Husin
Nurul Iza Adrina	Mohd Rameli
Thanh Nhut Minh	Nyugen
Poh-Yoke	Wong
Priya Dharshimi	Pichamuthu
Ramon Mustaufi Fadli	Abdul Mutalip
Saidah	Satderi
Shang-Ming	Goh
Siti Khadijah	Ahmad
Quang Khang	Tran
Tuan Emilia	Tuan Mohd Noor
Wei-Cheng	Tan
Yee-Send	Chan
Yong-Ling	Chia
Zan-Hui	Lee

Their role in the project was mainly assisting data collection during the field work.

I am glad to have had knowledgeable forest guides such as Zainuddin Bin Abbas, Zulkifli Bin Ibrahim, Muhammad Naim Bin Yusuf and Omar Bin Bakti who have taught me so much about the forest.

I thank the late Mohd Sukor Bin Harun and Mohd Hanizam Bin Abd Hamid, the van drivers from the School of Biological Sciences (USM) who transferred my volunteers and me to and from Ulu Muda multiple times.

On top of that, I am fortunate to be supported by the professionals as the following: Dr Nadine Ruppert is my primary thesis supervisor who also in-charge of permit applications, Dr Susan Lappan and Dr Thad Bartlett taught me the method of acoustic survey and data analysis, as well as personally helped and trained me in the field. Professor Shahrul Anuar Mohd Sah helped me with the permit application as well,

while Dr. Nik Fadzly Nik Rosely, together with Dr. Ruppert, helped me with my admission to University Sains Malaysia.

I would like to thank the schools and education communities, particularly The Boys' Brigade, Nature Classroom, Into The Woods, Tenby International School and Sunda Shelves for giving me the opportunity to conduct outreach programmes.

13. Any other comments?

I also like to express my regret for taking much longer time to complete the project using the Small Grant. Many things have moved and I was able to complete my field work without utilising much of the grant, which I have expected. I have started a full-time job in The Habitat Foundation, a non-profit organisation since mid-2019 while writing my thesis and journal article, which was published eventually in 2022, leading to my graduation from my Master's degree. This explains why I could not conduct more education programmes in a shorter time frame as I have full-time commitment. Just as I witness my growth in my conservation career, my personal life took a blow when I discover my then wife's infidelity in mid-2024. With much determination and sheer will, plus the grace of God, I managed to persevere and carry out more programmes until the end of 2025. Nevertheless, I must thank the board of Rufford Foundation for the patience and understanding, plus allowing me to use the grant in other ways, namely conducting outreach programs and the printing of *Yoyo The Gibbon* children picture book. Many have benefitted from the work along the way, and I will continue the journey to inspire more people to care about our forgotten apes.