Final Evaluation Report

Your Details	
Full Name	Le Quynh Trang
Project Title	Hawkmoth's diversity of Bidoup Nui Ba National Park, Lam Dong Province: database for biology conservation in Vietnam
Application ID	31729-1
Grant Amount	£5942
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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
Providing the preliminary checklist of hawkmoths species in Bidoup Nui Ba National Park				A total of 42 hawkmoths species, 23 genera and three subfamilies of Sphingidae family were recorded at the Bidoup Nui Ba National Park, including seven species of subfamily Sphinginae, 11 species of subfamily Smerinthinae and 24 species of subfamily Macroglossinae. We collected one species *Nephele hespera* (Fabricius, 1775) that an active and unwilling comes to light.
Comparing the hawkmoths diversity indices in different typical habitat				The results indicate that diversity indices are different between the study sites, in which the altitude level from 500-1000 m dominated the number of species.
Assessing the factors affecting the diversity of hawkmoths				The research results demonstrated that two factors, season and habitat types, are major factors in hawkmoth diversity. The results shows the distribution of arrival times into the light that clearly symmetrically distributed around midnight, with a steep rise in abundance in the 3rd hour after sunset and a decline after 3 hours, with more abundance from 21.00 to 01.00 (13.5% to 22.00% of total individuals into the lights). The most abundance was at 00.00 (22% of total specimens).
Training the skills of Sphingidae taxonomical works, light trap method and preserve specimen for the staffs in the park				Four field members were trained during the survey.

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

The habitat was disturbed by human activities such as honey and wood collecting. In addition, the development of tourism is a factor causing hawkmoth habitat degradation. The difficult issue that was not foreseen was the rigours of weather, especially land erosion, in the rainy season. Therefore, our team could not reach some areas that are predicted to have good biodiversity. To overcome this difficulty, we have been in discussions with the rangers to find lower forests that are in a safe condition. Moreover, the Covid-19 epidemic broke out in 2020 in the south of Vietnam, disrupting the fieldwork process. To reduce the impact from difficulties and increase the efficiency of the field survey, we surveyed the transect twice as opposed to three times as in the proposal.

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

- Providing the first hawkmoths checklist in Bidoup – Nui Ba National Park.
- Assessing diversity of hawkmoths along elevation gradient, seasons and habitats.
- Increasing awareness on natural resources and protection of hawkmoth habitats of local people while the project is implemented in the park. Conservationists and managers have recommended strategies for their conservation long-term and sustainable use of natural resources in the park

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

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

During the research period, local people were involved as field guides for surveys. We provided local participants with research skills including basic identification of hawkmoth species, using investigative equipment. The materials for the training was used from the collected specimens and available equipment such as a hand net, GPS, light trap.

6. Are there any plans to continue this work?

The checklist of hawkmoths in the park will be updated in time as the records of new species still increases each year. I will conduct more fieldwork in part of the national park that has not yet been surveyed to complete database of hawkmoths in Vietnam in my doctoral thesis. My next survey will be in October - December 2022, dependent on the pandemic situation.

After that, I will survey the neighbourhood parks including Chu Yang Sin NP and Nam Nung Nature Reserve (Central Highlands of Vietnam), and Kon Ka Kinh NP (Gia Lai province), Hon Ba Nature Reserve (Khanh Hoa Province) to compare the similarities hawkmoths composition among areas.

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

The report will be submitted to The Rufford Foundation and will be shared with the managers and scientists of Bidoup-Nui Ba National Park. The results will be presented to my colleagues at the Vietnam National Museum of Nature and Green Environment Centre. The specimens obtained from the project will be on display in the museum for sightseeing and learning purposes. Also, the survey results in Bidoup-Nui Ba will be used for my PhD thesis at Graduate University of Science and Technology, Vietnam Academy of Science and Technology in 2023.

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

The project was conducted from January 2021 to December 2021, including two field surveys, one in the dry season (5th - 26th January) and one survey in the rainy season (3rd - 24th May). We carried the study in 22 days each field trip.

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.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Aircraft ticket	600	670	+70	The price of ticket was higher at booking time.
Vehicle	150	228	+78	Oil fuel price increase
Room renting	1680	1228	-452	There are some days camping in the forest due to the challenge by weather and transportation
Food	2160	2145	-15	Saving budget
Scientific staff	450	450		No difference
Ranger	450	450		No difference
Field equipment	100	206	+106	Saving budget
Petrol of generator	252	107	-145	Saving budget
Entrance fee for protected areas	100	100		No difference
Porter		358	+358	To camping in the forest
Total	**5942**	**5942**		

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

There are some more steps we are going to study more:

- Extending the hawkmoth research in Centale Highlands in Vietnam where there are similar weather and habitat types.

- Cooperation between scientists and local people conservation on natural resources and protection of hawkmoths habitats.

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?

Rufford Foundation will be acknowledged at the PhD thesis in Graduate University of Science and Technology belonging Vietnam Academy of Science and Technology in 2023. The logo also will be used in a presentation for PhD defence.

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

Le Quynh Trang: Project coordinator, I was responsible to leading the team, planning, and data collecting and reporting

To Van Quang: Expert, field assistant, he provided the technical solution for my team

Pham Van Phu: Research assistant

Nguyen Duc Cuong: Ranger staff, field assistant

Le Van Son: Scientific staff

Konsenty & Mina: Porters and field guides.

13. Any other comments?

I appreciate the Rufford Foundation for their support as it supported me to study hawkmoths diversity that results were contributing to biodiversity conservation in Vietnam.

Setting up the camp site.

Top: Evergreen Forest at the Hon Giao Satiton in BiDoup Nui Ba at the end of the dry season. Bottom: Coniferous Forest at the Dung Ya Gieng Satiton in BiDoup Nui Ba at the end of the dry season.