

### **Final Project Evaluation Report**

Full Name	Vu Dinh Thong			
Project Title	Conservation of Flying Foxes ( <i>Pteropus</i> spp.) in Vietnam			
Application ID	15184-1			
Grant Amount	£5968			
Email Address	thongvudinh@gmail.com			
Date of this Report	September 9 <sup>th</sup> , 2018			



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

Objective	Not	Pan ach	Full	Comments
	hieved	tially nieved	y nieved	
Immediate protection of remaining colonies				Prior to the project, the colony size of flying foxes in Bat Pagoda in Soc Trang province, one of the two remaining permanent colonies in Vietnam, was severely reduced by different factors including disturbance by tourism and others. The project team collaborated with the Department of Science and Technology of Soc Trang province (DSTST), Can Tho University (CTU) and Institute of Ecology and Biological Resources (IEBR) and conducted a series of activities, which included building friendly fences and signboards to lead visitors and local people to proper actions for urgent conservation of the colony.
Obtaining baseline colony size and distribution data for Vietnamese flying fox species				Monitoring surveys was conducted during the project period at the two permanent roosting sites (Can Gio mangrove, Ho Chi Minh City, and Bat Pagoda, Soc Trang province) and other areas to assess the variation in each remaining colony size of Vietnamese flying foxes. Results from the monitoring surveys indicated that the colony in Cat Gio was more or less stable with total of ca. 200 - 300 individuals; the colony in Soc Trang province was in monthly variation, between 453 and 1753 individuals. Results from the field surveys through the known distributional range of flying foxes in Vietnam confirmed that, apart from the two permanent roosting sites



		However, each of these temporary
		colonies contains less than 100
		individuals and sensitive to human
		disturbance. They were clearly
		temporary and observable within short
		period, between few days and
		months.
Conducting ecological		With additional support from the Soc
and taxonomic		Trang People's Committee through
assessments		DSTST, Food and Agriculture
		Organisation (FAO) of United Nations,
		CTU and IEBR, the project team
		conducted a series of field surveys
		using GIS logger technology to assess
		the foraging areas, food composition
		and foraging behaviour of each
		colony.
		Morphological features indicated that
		the colony in Can Gio mangrove, Ho
		Chi Minh city belongs to Pteropus cf.
		vampyrus and the one in Soc Trang
		province belongs to Pteropus cf. lylei.
		On the other hand, results from
		examination of specimens in different
		museums, institutes and universities
		throughout the country indicated that
		their morphology exhibit diagnoses of
		at least three species: Pteropus
		hypomelanus, Pteropus lylei and
		Pteropus vampyrus. Specially, several
		examined specimens are different from
		the three above species in
		morphology. Their taxonomic status
		was still unconfirmed over the project
		period because of unavailability for
		DNA analyses.
Initiation of long-term		Meetings and workshops were
strategies for		conducted by the project team in
sustainable conservation		collaboration with experts from IEBR,
through training,		CTU, FAO, DSTST and others to provide
education, and public		practical recommendations for long-
awareness		term conservation of Vietnamese
		remaining flying foxes. Training 2 BSc, 1
		MSc and 2 PhD students in bat
		research and conservation: an MSc
		student of CTU, Mr Nguyen Tran Thanh
		Tinh, was supervised for completion of
		thesis on ecology of flying foxes.



		at a local high school. Through his lectures at school and outdoor activities, his knowledge about ecology and needs/strategies for conservation of flying foxes and other bats in Vietnam has been naturally delivered to local pupil generations and a wide range of local people. Particularly, 2 PhD students, Mr Hoang Trung Thanh and Mr Nguyen Van Viet of IEBR and V NU Hanoi University of Sciences, respectively, and 2 BSc students (Ms Tran Thi Lua and Ms Vu Thi Thuy) were equipped with knowledge, skills and solutions for both academic research and conservation of bats in Vietnam with serious attention to flying foxes. Awareness raising: signboards were built at the Bat Pagoda, Soc Trang province. The signboards contain attractive information and photos about important roles of flying foxes in ecosystems and solutions for conservation. On the other hand, formal and informal meetings and talks were also given by bat specialists and ecologists at the Bat Pagoda in Soc Trang province for raising public
Dissemination of information gathered during the project to public authorities and scientific communities through publications		Scientific reports with information about the current status, ecology, threats and recommendations for conservation of Vietnamese flying foxes were disseminated to FAO, CTU, DSTST and others. Presentations containing the project results were given at the 3rd International Southeast Asian Bat Conference (SEA BCO) in Kuching, Malaysia in 2015; the Rufford Small Grants for Nature Conference in Ho Chi Minh city, Vietnam and other national and international conferences and workshops.



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	Publications containing the project
	results were published in English
	language in the Vietnamese Journal of
	Biology (V JB), the top ranking peer-
	reviewed journal in Biology in Vietnam
	in 2015. The open access publication in
	English language in VJB aimed at easy
	accessibility for all Vietnamese and
	foreign readers. Remaining results from
	the project and subsequent period are
	being analysed for other publications in
	international journals in the future.

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

Vietnamese flying foxes comprise three species: small flying fox (*Pteropus hypomelanus*), Lyle's fying fox (*Pteropus lylei*) and large flying fox (*Pteropus vampyrus*). According to descriptions in publications, these three species are distinguishable in morphological features. However, several examined specimens are different from the descriptions of the above species in morphology. Therefore, their taxonomic status was still unconfirmed by the end of the project period. It requires an intensive assessment in longer time than the project period for extensive comparison with flying foxes from surrounding countries.

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

- a) The first ecological data on foraging areas, behaviour, food composition and relevant information of flying foxes in Vietnam. These results are basic and essential for determination and implementation of practical conservation strategies.
- b) Fruitful training: 2 BSc, 1 MSc and 2 PhD students from different universities and schools were trained and equipped with knowledge and skills for both academic research and conservation of bats through the project activities. These students have completed theses and worked as permanent teachers and lecturers in biology at different high schools and universities in Vietnam.
- c) Effective awareness raising and information dissemination: friendly fences together with signboards at the threatened roosting site, Bat Pagoda, Soc Trang province, have led visitors and many local people to proper activities to avoid disturbance to flying foxes. Presentations at national and international conferences together with publications in peer-reviewed scientific journals have disseminated the project results to broad audience at local, national and international international levels.



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

One local student was trained and supported for implementation of MSc thesis on flying fox research and conservation.

Selected local rangers, authorities, students and visitors were involved in project field surveys, building the friendly fences and signboards. Results from the project were basic for local authorities and societies to conserve the remaining colony and foraging habitats of flying foxes in Soc Trang province and surroundings.

#### 5. Are there any plans to continue this work?

- Extensive research on systematics of Vietnamese flying foxes for a solid confirmation of their diversity and population genetics.
- Continuous research, monitoring and training for strengthening bat research and conservation in Vietnam with further understanding of ecology and behaviour of flying foxes.
- Plantation of fruit trees within the known foraging habitats for long-term development of the colony size and populations of Vietnamese flying foxes.

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

The project results have been shared with DSTST, CTU, FAO and other universities and research institutes. They have also been included in lectures for post graduate courses in biology at the Graduate University of Science and Technology, Hanoi, Vietnam. Obtained data and materials are being analysed for presentations at national, international conferences and publications in peerreviewed scientific journals.

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

All project activities (field surveys in Soc Trang province, Ho Chi Minh City and other localities; training, conservation campaigns) fit well the proposed timescale.

8. 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
Accommodation	2400	2400	0	
Building fences	500	500	0	



Sign boards	300	300	0	
Travel expenses	1000	1080	-80	The cost for renting vehicle was rather higher than proposed because of more travelling in the field.
Field assistant	600	600	0	
Conservation materials	1000	1000	0	
Field consumables	168	200	-32	Expenses for batteries were higher than the proposed budget amount.

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

- Experimental supply of food (different fruits and others) for flying foxes at the remaining permanent roosting sites.
- Long-term monitoring and conservation programme with plantation of fruit trees to supply sufficient food and foraging habitats for flying foxes in Soc Trang province and surroundings.
- Continuous research for comprehensive understanding of ecology and behaviour for sustainable development of populations.

# 10. 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?

The Rufford Foundation logo was used at the signboards and all presentations at national and international conferences: The 3rd International Southeast Asian Bat Conference (SEABCO) in Kuching, Malaysia in 2015; the Rufford Small Grants for Nature Conference in Ho Chi Minh city, Vietnam; and other conferences. The Foundation is also acknowledged in all publications.

The Foundation received much attention from scientists attending the above conferences and other meetings.

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

**Vu Dinh Thong:** led and conducted all field surveys and other project activities; confirmed the taxonomic status of flying foxes; collaborated with taxonomists and curators in other countries to obtain available data on flying fox collections from Vietnam; supervised BSc, MSc and PhD students for implementation of theses on Vietnamese bats.

**Nguyen Tran Thanh Tinh:** conducted field surveys in Soc Trang and surroundings and monitored other project activities with an emphasis on ecological studies and implementation of urgent conservation actions.

**Trinh Minh Hoang:** organized field surveys, meetings and workshops, and made plans for conservation actions.



**Vu Long, BSc:** conducted field surveys for assessments of updated distributional ranges and conservation status.

Hoang Trung Thanh: conducted field surveys for ecological assessments and conservation recommendations.

**Nguyen Van Viet:** conducted field surveys in Ca Mau, Ba Ria-Vung Tau and Kien Giang Provinces for assessments of seasonal movement in the province and surroundings.

Ha Van Tue: conducted field surveys and identified ejecta samples and plant species to determine food composition and vegetation types at roosting sites and foraging areas.

Ho Thi Loan (in the position of Nguyen Giang Son since he studied abroad): analyzed tissue samples for DNA data in identification of flying foxes.

#### 12. Any other comments?

We would like to express our sincere thanks to the Rufford Foundation for valuable support for conservation of flying foxes in Vietnam.