The Rufford Foundation
Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other 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. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Kanokorn Rueangsawang
Project title	The conservation assessment of endemic and threatened on *Justicia* species in northern Thailand
RSG reference	17091-1
Reporting period	November 2015 to November 2016
Amount of grant	£ 5000
Your email address	K_koh516@yahoo.com
Date of this report	January 2017

1. Please 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 field survey the species diversity				Collecting fertile material was carried out in the five regional natural areas and Twenty-three species were found in the regions, which is eight species endemic to northern Thailand. Several species grow are fragmented making it difficult to find some of endemic species and difficulty of collecting both flowers and fruits.
To assess the conservation status of endemic species				Four species are critically endangered, endangered and vulnerable. One species is near threatened. Several species are found in protected areas. Three species are data deficient because the distribution and population size remain unclear.
Evaluated information about distribution pattern, population status, relationship between species and their habitats				Eight species are endemic to the region, representing 32% of the species occurring in this region. One of this is found only a single locality: *J. imlayae* is restricted to Hue Sai, Nan in evergreen or mixed deciduous forests. The other species (*J. bicalcarata, J. decumbens, J. decurrens* and *J. pallida*) are recorded from two or more localities. Most of species are typically found in evergreen forest and the stream areas have more moisture. Distribution maps of population are also shown.
Prepare recommendation of rare species for conservation				Urgent action is required to conserve the critically endangered, endangered and near threatened. Eight species should be represented in *ex-situ* collections such as living collection. We recommend that

				the Office of Natural Resources and Environmental Policy and Planning should add these species to the Thailand Red Data.
Promote awareness for the benefits conservation natural habitat				We had a very successful to promote awareness for graduate and undergraduate student, 36 students attended the educational workshop from Faculty of Science, Ramkhamhaeng University. The theme of workshop was developing their knowledge and conservation natural habitat of the plants.

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

The flowering period vary depending on the species, almost produce flowers and fruits during November to April each year. We expected to get plant during these periods. Unfortunately, we found only sterile part because a lengthening dry season and increased temperature in December 2016 affected the flowering stage. The climate of Thailand in 2016 is drier and hotter than it used to be. Thus further field work is required to complete these collections.

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

a) New scientific data

There are 23 species of the genus *Justicia* in northern Thailand, eight species of which are endemic to the region. All of these species are rare to uncommon and not found in all natural areas of vegetation. Most species occur only at high elevation between 1,000 - 2,400 m in dry evergreen forest. The stream areas have relatively much moisture than other areas in forest, several species are found in this area e.g. *J. bicalcarata*, *J. pallida* and *J. imlayae*. Three species are found from natural areas near Myanmar border, which have the highest diversity of this plant.

b) Evaluates the conservation status

Evaluates the conservation status of eight species of *Justicia* native to northern Thailand that occur in Doi Phu Kha, Nan Province; Mea Wong, Kamphaeng Phet Province; Doi Khun Tan, Lamphun; Doi Luang, Chiang Rai and Doi Pha Hom Pok, Chiang Mai. In accordance with the Red List criteria of the IUCN, distribution maps of the native population are provide. The results show that four species are critically endangered, endangered and vulnerable. One species is near threatened. Three

species are data deficient because the distribution and population size remain unclear. All of these natural habitats are protected areas.

c) Educational workshop

The aim is to promote the benefits conservation natural habitat. We had a very successful to promote awareness for graduate and undergraduate student, 36 students attended the educational workshop from Faculty of Science, Ramkhamhaeng University. The theme of workshop was developing their knowledge about conservation natural habitat of the flowering plant and the shrimp plant. We also educated them on taxonomy, identification, ecology and conservation of the plant. We provided a booklet of the shrimp plant during field studies.

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

The shrimp plant is a little known genus of flowering plant. It is a long history of use in local traditional medicine. Beside of protecting plants, the management of their natural habitat is one of the most important. The data from this survey is based on herbarium material and also from local people gave us the information about the utilization during the field works; they also learned scientific names and how to identify of species.

5. Are there any plans to continue this work?

We will continue to collect the shrimp plant because some of these species have not seen complete material that I have been unable to identify such as flowers and fruits. The seed collection will prepare for regeneration ability to conserve in ex-situ at the Forest Herbarium-living collections.

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

The results of the conservation assessments are being shared to the Office of Natural Resources and Environmental Policy and Planning for improving Thailand Red Data: Plants. In addition, we prepared two manuscripts and the draft of booklet about the shrimp plant. The project has shared the results at the 10th Botanical Conference of Thailand.

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

The RSG has contributed 14 months during November 2015 to January 2017. This is about 2 months more as compared to the original plan because the phenology and abundance of many species have changed.

8. Budget: Please 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.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Fieldwork expenses				
Rent car	880	950	-70	We rent a van with diver from Bangkok to Nan, Kamphaeng Phet, Lamphun, Chiang Rai and Chiang Mai (24 days)
Car fuel	660	709	-49	We rent a van without fuel included.
Accommodation during field survey	490	455	35	A house at the national park was available for 4 persons.
Food during field survey	440	350	90	For 4 persons
Local guide	80	80		
Digital camera (DSLR) with accessories for the fieldwork	360	420	-60	Due to increases of costs of accessories.
Material for education workshops	1000	1100	-100	Besides, the budget included the transportation and registration for 4 persons to attend the 10th Botanical Conference of Thailand.
Material for plants collecting: 95% ethanol, glass ware, pruning shears	240	141	99	Some of these were borrow from the department of Biology, RU
Printing booklet	650	682	-32	45 pages, 100 copies of

				the colour in Thai language.
Others: printing paper, colour cartridge & black-white	200	113	87	
Total	**£5000**	**£5000**	**0**	

The exchange rate is 1 Pound sterling = 54.5 Baht: 15 December 2016

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

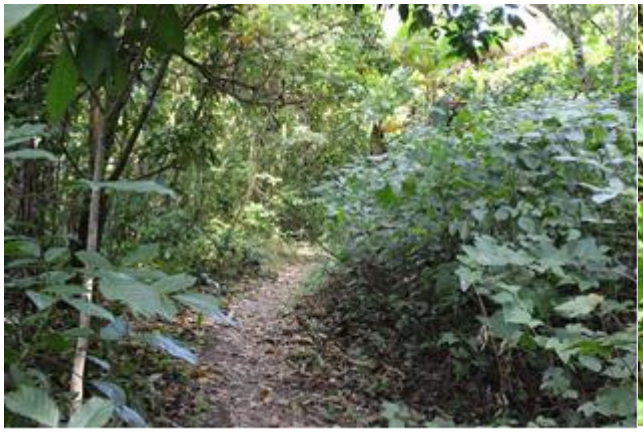
- Completing publications on new to scientific name and the conservation status of the shrimp plant.
- Continuing collecting seed material of *Acanthus* family and deposit at the seed banks of the Thai government, initially with the intention of banking agricultural resources.
- Expanding assessments of the conservation status of an entire plant family in Thailand
- Giving the opportunities for undergraduate students at RU to train plant diversity and processes of conservation.

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

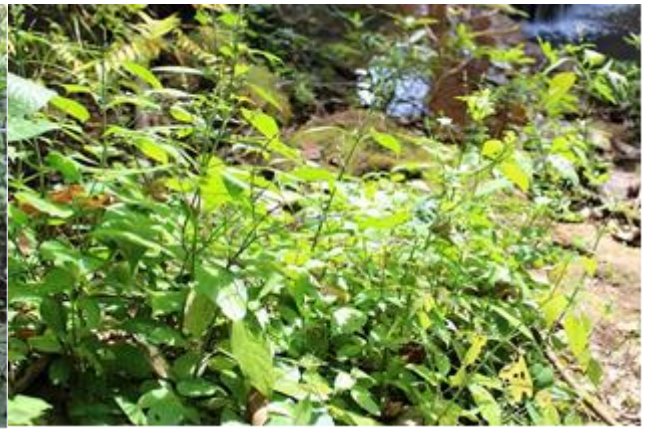
The RSG logo has been shown in oral presentation at the 10th Botanical Conference of Thailand and also in acknowledged of two manuscripts and the booklet.

11. Any other comments?

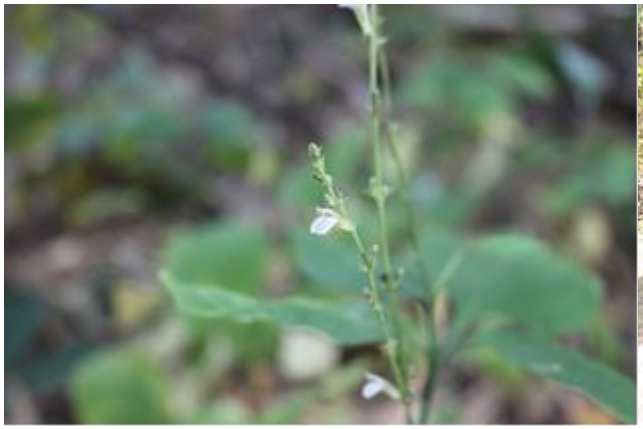
We are extremely grateful to the Rufford Small Grant Foundation for kindness and support of this project.



Natural trial at Doi Khun Tan, Lamphun

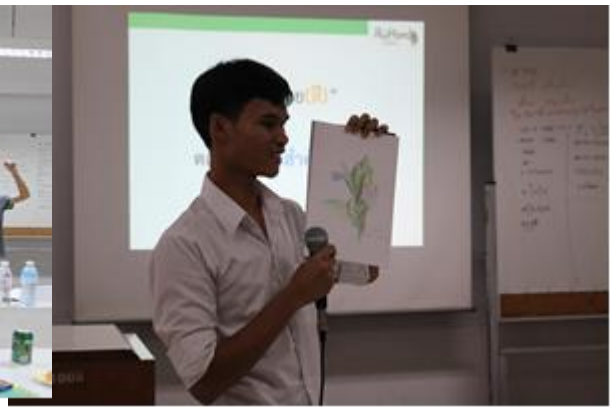


Justicia imlayae along the stream



J. palida in bamboo forest

Students during field studies



The workshop on identification and conservation of the plant from Faculty of Science, Ramkhamhaeng University.